

Technical Facts

EXECUTONE

CARE/COM and CARE/COM II
Nurse Call System

No. 1693
July 11, 1990
For All EXECUTONE Distributors

NEW INFORMATION ON EXECUTONE BRAND CABLING FOR CARE/COM AND CARE/COM II SYSTEMS

1. INTRODUCTION

This Technical Fact supercedes TF1678 by providing more information on the new Executone brand cabling relative to the Care/Com and Care/Com II Nurse Call Systems. As mentioned in TF1678, the new cabling is UL Listed for Type CL2 cabling and is designed to meet more stringent regulatory codes thereby increasing overall quality.

The information in this Technical Fact is more comprehensive, including complete cable comparisons, cabling guidelines for maximum lengths, use of conduit, etc. and applies to all Care/Com and Care/Com II installations in which the new cables will be utilized.

Note that the new cables replace the cables shown in the Care/Com & Care/Com II Product and Technical Manuals in the following sections:

the plans in Section 400 (Design & Configuration) and
the installation hookups in Sections 610 through 630 - Care/Com II
the installation hookups in TB1697B and TB1728A - Care/Com

Refer to the new cables according to the following information.

- continued -

File a copy of this Technical Facts in
your Master Technical Facts file, in your
Care/Com Technical Manual, part
number 2314D and Product Manual,
part number 2313B, and in your Care/
Com II Technical Manual, part number
3083101A and Product Manual, part
number 3082901A. Also list it on the
Record of Changes page.

Healthcare
Product Management

Attachments: Cable Technical Specifications (12)

1.1 Wire and Cable Model Numbers

Note to specification writer: Specify the wire and cable required for system being specified using the new cabling.

WN09-1 Cable (refer to Technical Specification No. TS40976).
WN08-3 Cable (refer to Technical Specification No. TS40979).
WN08-2 Cable (refer to Technical Specification No. TS40980).
WN06-1 Cable (refer to Technical Specification No. TS40981).
WN05-1 Cable (refer to Technical Specification No. TS40977).
WN03-2 Cable (refer to Technical Specification No. TS40982).
WN03-1 Cable (refer to Technical Specification No. TS40978).
WN02-3 Cable (refer to Technical Specification No. TS40983).
WN02-2 Cable (refer to Technical Specification No. TS40984).
WN02-1 Cable (refer to Technical Specification No. TS40985).
WWC7 Cable (refer to Technical Specification No. TS1360).

Refer to Tables 1 through 5 to see how the new cables replace the previous cables. You'll notice that in many instances, the new cable matches exactly with the previous cable according to wire colors and gauge.

Table 1. Cable Comparison for Care/Com II Nurse Control Station

FUNCTION	WN09-1 ¹ /WN05-1 ²	WS11 ³ /WS5 ⁴
+24 Volts	Green 22 AWG ²	Green 22 AWG ⁴
+12 Volts	Red 14 AWG ¹ , Yellow 14 AWG ¹	Red 16 AWG ³ , Yellow 16 AWG ³
Digital Ground	Black 14 AWG (2) ¹	Black 14 AWG ³ , White 14 AWG ³ Blue 22 AWG ³ , Brown 22 AWG ³
Analog Ground	Shield 22 AWG ¹ , Black 22 AWG ²	Shield 22 AWG ³ , Black 22 AWG ⁴
Serial Data 1	Blue 22 AWG ¹	Orange 22 AWG ³
Serial Data 2	Brown 22 AWG ¹	Violet 22 AWG ³
Duty	Slate 22 AWG ¹	Slate 22 AWG ³
External Reset	Green 22 AWG ¹	Green 22 AWG ³
IC Hot	Red 22 AWG ²	Red 22 AWG ⁴
IC Ground	White 22 AWG ²	White 22 AWG ⁴
Shield	Shield 22 AWG ²	Shield 22 AWG ⁴

Table 2. Cable Comparison for Care/Com Nurse Control Station

FUNCTION	WN08-2	WCCS8
+24 Volts	Red 18 AWG, Yellow 18 AWG	Red 18 AWG, Yellow 18 AWG
-24 Volts	Black 18 AWG	Black 18 AWG
Duty	Brown 22 AWG	Brown 22 AWG
Busy	Blue 22 AWG	Blue 22 AWG
IC Hot	Orange 22 AWG	Orange 22 AWG
IC Ground	Violet 22 AWG, Shield 22 AWG	Violet 22 AWG, Shield 22 AWG

All other connections via standard double-ended 25 pair cable.

Table 3. Cable Comparison for Common Run (Care/Com and Care/Com II)

FUNCTION	WN08-2	WCCS8
+24 Volts Common	Red 18 AWG	Red 18 AWG
-24 Volts Hot	Yellow 18 AWG	Yellow 18 AWG
-24 Volts Flashing	Black 18 AWG	Black 18 AWG
Duty	Brown 22 AWG	Brown 22 AWG
Page Common	Blue 22 AWG	Blue 22 AWG
IC Hot	Orange 22 AWG	Orange 22 AWG
IC Ground	Violet 22 AWG	Violet 22 AWG
Shield	Shield 22 AWG	Shield 22 AWG

Table 4. Cable Comparison for Home Run (Care/Com and Care/Com II)

FUNCTION	WN02-1	WS2
Control	Tinned 22 AWG	Tinned 22 AWG
Annunciate	Copper 22 AWG	Copper 22 AWG

Table 5. Cable Comparison for Dome Lamp (Care/Com and Care/Com II)

FUNCTION	WN03-2 ¹ /WN02-1 ²	WT3V ¹ /WS2 ²
+24 Volts	Red 20 AWG ¹ /Copper 22 AWG ²	Red 20 AWG ¹ /Copper 22 AWG ²
Normal Call Dome ¹	White 20 AWG ¹	White 20 AWG ¹
Emergency Call Dome ¹	Black 20 AWG ¹	Black 20 AWG ¹
Normal & Emergency Dome ²	Tinned 22 AWG ²	Tinned 22 AWG ²

¹ For two-lamp dome lamp.

² For one-lamp care light.

Table 6. Cable Comparison for Peripherals (Care/Com and Care/Com II)

FUNCTION	WN06-1	WWC3
+24 Volts	Orange 22 AWG	Orange 22 AWG
-24 Volts Flashing	White 22 AWG	White 22 AWG
Annunciate (to Pat. Sta.)	Green 22 AWG	Green 22 AWG
Annunciate (to Eq. Cabinet)	White 22 AWG	White 22 AWG
Emergency Call Dome	White 22 AWG	White 22 AWG
Care-Light ¹	Blue 22 AWG	Blue 22 AWG

Unused Conductors

WN06-1: Blue, only in applications with two-lamp dome lamp.

WWC3: Blue, only in applications with two-lamp dome lamp.

¹ For one-lamp care light applications only.

Table 7. Cable Comparison for Entertainment (Care/Com II)

FUNCTION	WN08-3'/WN05-1 ²	W4P ³ /WS5 ⁴
Radio Control No. 1	Brown 24 AWG ¹	Brown 24 AWG ³
TV Control No. 1	Red 24 AWG ¹	Red 24 AWG ³
Ent Ground No. 1	Yellow 24 AWG ¹	Yellow 24 AWG ³
Ent Hot No. 1	Green 24 AWG ¹	Green 24 AWG ³
Radio Control No. 2	Black 22 AWG ²	Black 22 AWG ⁴
TV Control No. 2	Green 22 AWG ²	Green 22 AWG ⁴
Ent Ground No. 2	White 22 AWG ²	White 22 AWG ⁴
Ent Hot No. 2	Red 22 AWG ²	Red 22 AWG ⁴
Ground	Orange 24 AWG ¹ /Shield 22 AWG ²	Orange 24 AWG ³ /Shield 22 AWG ⁴

Unused Conductors

WN08-3: Blue, White, Black

W4P: Blue, White, Black

WN05-1 (replacing WS5) only required for dual patient stations.

Table 8. Cable Comparison for Entertainment (Care/Com)

FUNCTION	WN05-1 ¹ /WN05-1 ²	WS5 ³ /WS5 ⁴
Radio Control No. 1	Shield 22 AWG ¹	Shield 22 AWG ³
TV Control No. 1	Green 22 AWG ¹	Green 22 AWG ³
Ent Ground No. 1	White 22 AWG ¹	White 22 AWG ³
Ent Hot No. 1	Red 22 AWG ¹	Red 22 AWG ³
Radio Control No. 2	Shield 22 AWG ²	Shield 22 AWG ⁴
TV Control No. 2	Green 22 AWG ²	Green 22 AWG ⁴
Ent Ground No. 2	White 22 AWG ²	White 22 AWG ⁴
Ent Hot No. 2	Red 22 AWG ²	Red 22 AWG ⁴
Ground	Black 22 AWG ¹ /Black 22 AWG ²	Black 22 AWG ³ /Black 22 AWG ⁴

^{2&4}Second WN05-1 (replacing WS5) only required for dual patient stations.

Table 9. Cable Comparison for Zone Control Module

FUNCTION	WN08-2 ¹ /WN03-2 ²	WCCS8 ³ /WT3V ⁴
Dome (H)	White 20 AWG ²	White 20 AWG ⁴
-24 Volts Hot In	Yellow 18 AWG ¹ (in)	Yellow 18 AWG ³ (in)
-24 Volts Hot Patient	Yellow 18 AWG ¹ (out)	Yellow 18 AWG ³ (out)
24 Volts Flashing In	Black 18 AWG ¹ (in)	Black 18 AWG ³ (in)
24 Volts Flashing Patient	Black 18 AWG ¹ (out)	Black 18 AWG ³ (out)
Dome (F)	Black 20 AWG ²	Black 20 AWG ⁴

Only connections to zone control module are referenced.

1.2 Using Executone Brand Wire and Cable

A large portion of an installation consists of connecting various equipment using cables and wires. It is very important that all wiring and cabling requirements are met. Use only the recommended type of "Approved Executone Brand" wire and cable necessary for the installation. Using the correct wire and cable will ensure proper system performance and increased reliability.

Executone cannot support or warranty any product/system or its performance if installed using non-approved wire and cable.

Executone Brand cable has been specifically designed for the Care/Com and Care/Com II Systems to assure optimum operating performance and must be used in all installations. This includes new installations and for replacing other systems with the Executone Care/Com or Care/Com II .

2. CABLE ROUTING

The common cabling for patient, staff or duty stations can be routed to the central equipment cabinet by either of two methods, or by a combination of the two. The two methods of cable routing are: dome-to-dome cabling and station-to-station cabling.

NOTE: The recommended cabling method is the dome-to-dome method; see the paragraphs below.

For proper system performance, cabling should be routed through the proper conduit as per Paragraph 4.

2.1 Dome-To-Dome Cabling

This is the recommended method of cabling. The common cabling is routed through the dome lamp backboxes. Separate cable lengths are installed between each dome lamp and its respective station unit.

Dome lamp junctions are closer together on average than the station units. This means the total continuous length of the common cabling to the last station is much shorter in the dome-to-dome cabling method than in the station-to-station method (excluding the cable lengths between dome lamps and stations).

2.2 Station-To-Station Cabling

NOTE: Because of inherent limitations, the station-to-station cabling method is not recommended.

In this method, the common cabling is routed through each station unit. Therefore, the total continuous length of the common cabling is usually longer. Also, the cabling running in and out of the station unit requires more backbox space. If station-to-station is required, contact the Field Service Department for specific cabling information.

3. CABLING CAPACITY

There are three basic types of cable runs originating from the central equipment: nurse control station cable run, common cable run, and a home run to each patient, staff and duty station in the system. For each type, there are certain requirements which must be observed. See paragraphs 3.1 and 3.2.

3.1 Nurse Control Station Cable Requirements

The nurse control station is connected to the central equipment with its own independent cable run. In Care/Com II installations, additional wires may need to be added to this cable run. This is dependant on certain conditions such as cable length, etc. Table 10 provides the distance when the wires need to be added.

Table 10. Nurse Control Station Cable Run Requirements (Care/Com II)

CABLE LENGTH	ADD EXTRA WIRES FOR:			
	DIGITAL GND	+12V	+24V	ANALOG GND
401' - 600'	1 #16 AWG	1 #16 AWG	1 #18 AWG	1 #18 AWG
601' - 1000'	1 #12 AWG	1 #12 AWG	1 #16 AWG	1 #16 AWG

NOTE: All extra wires and cables must conform to NEC and/or local codes whichever is most stringent.

The distance is based on cable footage from the equipment panel to the nurse control station.

3.2 Common Cable and Home Run Cable Requirements

A maximum combination of 60 patient, staff and duty stations may be connected to an equipment panel (a 60 station nurse control station is required for a system configured to the maximum number of 60 stations). These stations units are connected to the equipment panel in a configuration consisting of up to 6 common cables. Each common cable run can support a maximum of 10 station units. In addition to the common cable, each station requires an individual home run cable connected to the central equipment.

4. CONDUIT REQUIREMENTS

It is recommended that all Executone System cabling be run through metallic conduit. If system cabling is run in an open cable tray instead of metallic conduit, all system cabling should be partitioned off from any other cables in the tray or separated to the greatest extent possible.

CAUTION: System cabling should not be placed in the same pipe, conduit, or compartment containing other electrical systems, high voltage wiring, or coaxial wiring that generates RF interference such as: MATV, CATV, CCTV, broadband, and pocket page (UHF, VHF and low band).

CAUTION: Do not run low and high level audio lines in the same conduit.

For proper system performance, the correct conduit must be used for the cabling runs. Use Table 11 to determine the conduit requirements when running the cabling for a new installation or for a retrofit installation. The following paragraphs explain how to read Table 11. Again, system cabling must not be placed in the same pipe, conduit or compartment containing other electrical wiring.

Listed to the left of Table 11, reading from top to bottom, are the new Executone cables and wires with factor numbers. The factor numbers are based on the area within the circumference of each cable and wire.

Listed across the bottom of the table are conduit sizes ranging from 1/2" to 3". Next to each conduit size is the appropriate conduit factor number for the conduit area based on 40% fill.

The remainder of the table shows the maximum number of same type wire or cable to be run in the conduit based on 40% fill.

Table 11. Conduit Size Chart for Executone Cables and Wires

CABLE AND WIRE TYPE	FACTOR #	MAXIMUM NUMBER OF SAME TYPE CABLE OR WIRE IN A CONDUIT							
		9	18	28	50	68	112	200	266
WN02-1	0.75	9	18	28	50	68	112	200	266
WN02-2	2	3	7	10	19	25	42	75	100
WN02-3	3	2	4	7	12	17	28	50	66
WN03-1	2	3	7	10	19	25	42	75	100
WN03-2	3	2	4	7	12	17	28	50	66
WN05-1	3	2	4	7	12	17	28	50	66
WN06-1	5	1	2	4	7	10	16	30	40
WN08-2*	6	1	1	3	6	8	14	25	33
WN08-3	3	2	4	7	12	17	28	50	66
WN09-1*	11	-	1	1	3	4	7	13	18
WWC14*	11		1	1	3	4	7	13	18
WWC7*	6	1	1	3	6	8	14	25	33
W14VS*	13	-	1	1	2	3	6	11	15
12AWG**	2	3	7	10	19	25	42	75	100
14AWG**	1.5	4	9	14	25	34	56	100	133
16AWG**	1	7	14	21	38	51	84	150	200
18AWG**	0.75	9	18	28	50	68	112	200	266
Conduit Size		1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"
Conduit Factor #		7	14	21	38	51	84	150	200

* For multiple large cables add factor of 4.

**Thermoplastic wire (Type F, TF or TW).

4.1 Choosing Conduit Size for Same Type of Cable or Wire

Above each conduit size is the maximum recommended number of cables or wires which will fit into the particular conduit size. Use this value for the particular cable needed. This may be exceeded slightly where absolutely necessary, since number of cables or wires is based on 40% fill.

CAUTION: As previously stated, system cabling should not be placed in the same pipe, conduit or compartment containing other electrical systems, high voltage wiring, or coaxial wiring.

4.2 Choosing Conduit Size for Combination of Cables and Wires

To determine the conduit size required for a combination of different cables and wires, proceed as follows:

- a. Refer to the factor numbers of the particular cables and wires going into the conduit. Add all the cable and wire factor numbers. When more than one large cable (represented by the * symbol in Table 11) is used in the same conduit, add a factor of 4 to the sum of cable and wire number factors.
- b. With this figure, refer to the conduit factor numbers given for the various conduits. Choose the next conduit size which is larger than the total sum of cable and wire factor numbers you have computed.

CAUTION: As previously stated, system cabling should not be placed in the same pipe, conduit or compartment containing other electrical systems, high voltage wiring, or coaxial wiring.

Example:

Choose the conduit size for two WN09-1 cables (cable factor #11 each), four WN05-1 cables (cable factor #3 each), one 14AWG wire (wire factor #1-1/2), and two 12AWG wires (wire factor #2 each).

2 WN09-1, Cable Factor #11	(2 x 11)	22
4 WN05-1, Cable Factor #3	(4 x 3)	12
1 14AWG, Wire Factor #1-1/2	(1 x 1-1/2)	1-1/2
2 12AWG, Wire Factor #2	(2 x 2)	4
Large Cable (multiple WN09-1 cables) Factor #4		4
 TOTAL CABLE/WIRE FACTOR		43-1/2

Refer to the conduit factor numbers on the bottom of Table 11. A 1-1/2" conduit, which has the next larger factor number of 51, would be used.

5. SYSTEM LAYOUTS USING THE NEW CABLES

For your convenience, Figures 1 and 2 show how the new cables are implemented in a Care/Com or Care/Com II installation. Figure 1 is a simplified block diagram whereas Figure 2 represents an actual floorplan.

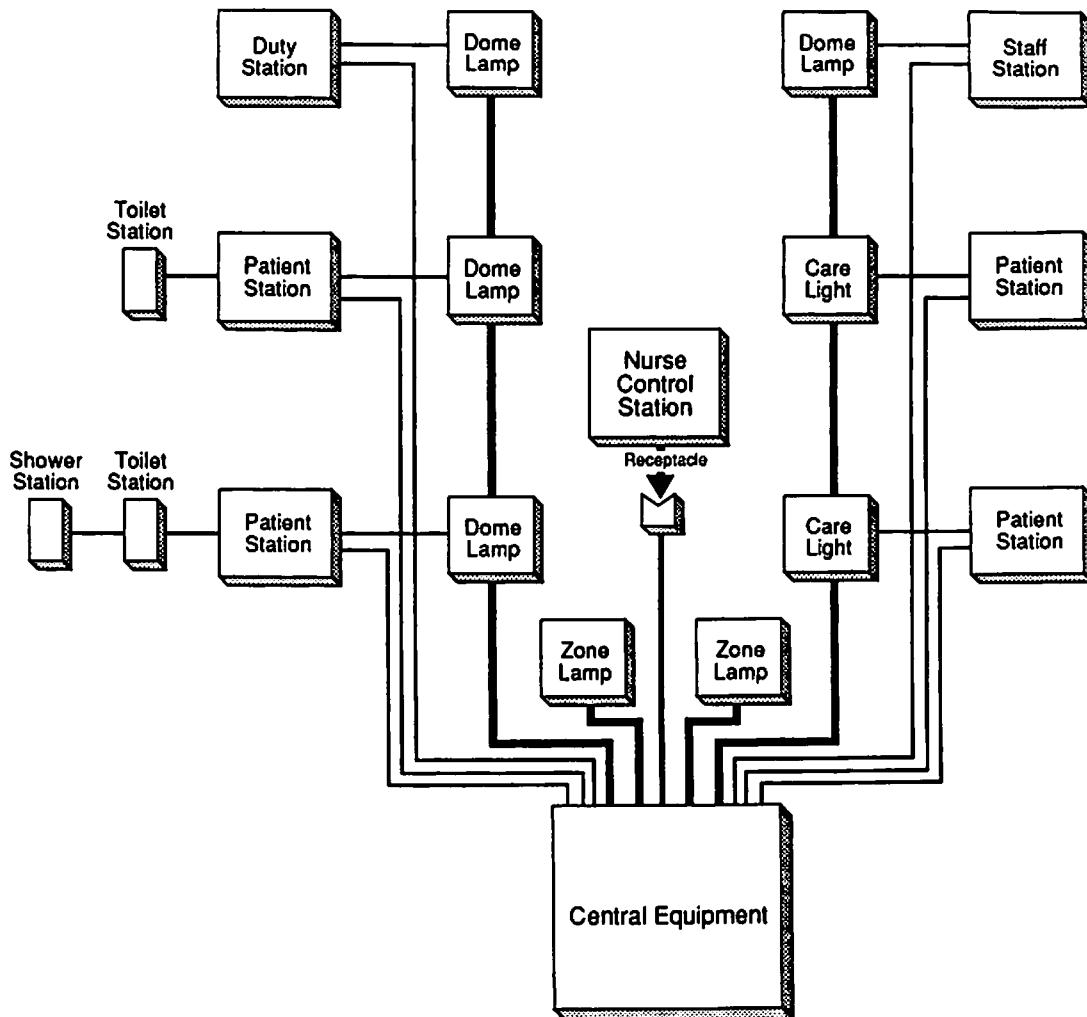


Figure 1. System Basic Block Diagram

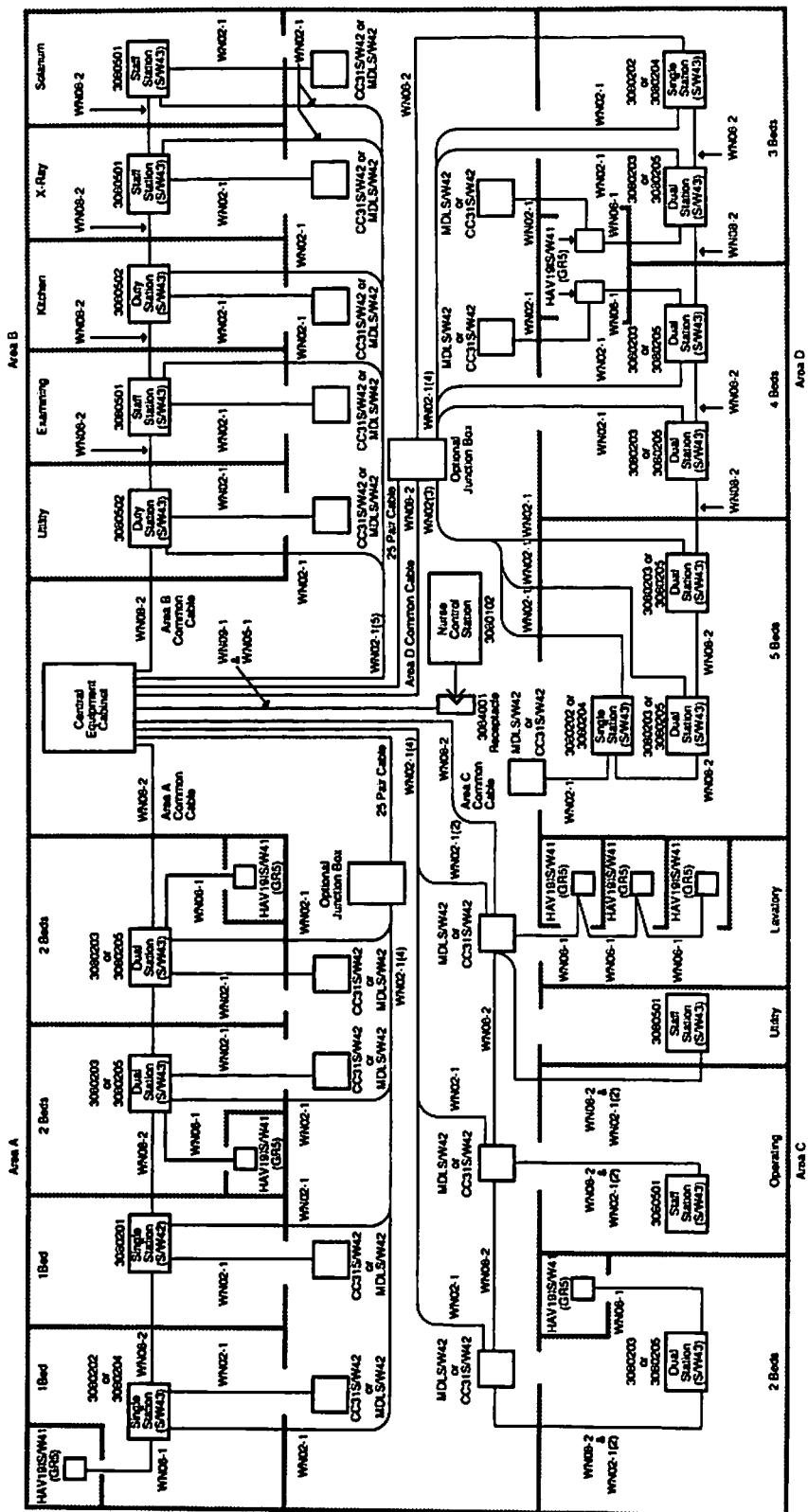


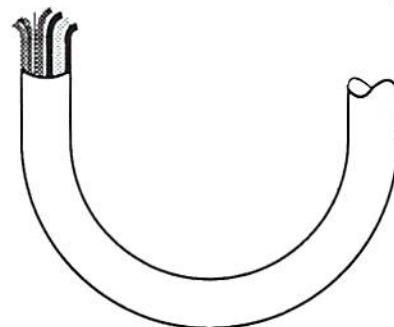
Figure 2. Sample System Layout

TECHNICAL SPECIFICATIONS

CABLE

WN09-1

- *UL LISTED PER UL SUBJECT 13 FOR TYPE CL2*
- *EASY TO STRIP*
- *RODENT RESISTANT OUTER JACKET*
- *FLEXIBLE*
- *ABRASION RESISTANT*



DESCRIPTION

Cabling containing nine conductors arranged in four groups. Conductors polyvinyl chloride (PVC) insulated and protected by an outer jacket.

GAUGE AND TYPE

Group 1 - two insulated #22 gauge solid conductors, twisted together with one #22 gauge bare drain wire, and covered by metallized shielding tape.

Group 2 - two insulated #22 gauge solid conductors twisted together.

Group 3 - two insulated #14 gauge solid conductors twisted together.

Group 4 - two insulated #14 gauge solid conductors twisted together.

ASSEMBLY

Four groups assembled by cabling them together with a 6 inch (15.24cm) left hand lay and provided with nylon rip cord.

INSULATION

Conductors - colored polyvinyl chloride with minimum thickness of 0.010" (0.254mm) for #22 gauge; and 0.025" (0.635mm) for #14 gauge.

Outer Jacket - polyvinyl chloride with minimum thickness of 0.025" (0.635mm).

SHIELDING

Metallized tape (lamiglas type) overlapped for 100% shielding.

DC RESISTANCE

22 Gauge - 16.14 ohms maximum per 1,000 feet (304.8m) at 68° F (20° C).

14 Gauge - 2.53 ohms maximum per 1,000 feet (304.8m) at 68° F (20° C).

UL LISTED

Cable is UL Listed per subject 13 for Type CL2 cable.

CABLE FINISH

Outer jacket color is Executone Standard Metalustre.

WIRE COLOR CODE

Group 1 - one blue, one brown, and one bare drain wire;

Group 2 - one green and one slate;

Group 3 - one red and one black;

Group 4 - one yellow and one black.

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

WN09-1 CABLE

The WN09-1 Cable shall contain the nine conductors arranged in four groups. Group one shall consist of one pair of individually insulated #22 gauge solid conductors twisted together with one #22 gauge solid bare drain wire. Group one shall be covered with metallized tape (lamiglas type) spirally wrapped with a minimum overlap of 1/16" (1.588mm), metal side in contact with the bare drain wire. Group two shall consist of two individually insulated #22 gauge solid conductors twisted together. Group three shall consist of two individually insulated #14 gauge solid conductors twisted together. Group four shall consist of two individually insulated #14 gauge solid conductors twisted together. The four groups shall be assembled by cabling them together with a six inch (15.24cm) left hand lay and providing a nylon rip cord.

The DC resistance of the #22 gauge conductors shall not be more than 16.14 ohms per thousand feet (304.8m) of conductor at 68° F (20° C). The DC resistance of the #14 gauge conductors shall not be more than 2.53 ohms per thousand feet (304.8m) of conductor at 68° F (20° C). The cable shall be UL Listed per subject 13 for type CL2 cable.

Wire insulation shall be colored polyvinyl chloride (PVC) with a minimum thickness of 0.010" (0.254mm) for #22 gauge; and 0.025" (0.635mm) for #14 gauge. Cotton or other insulating materials which deteriorate with age shall not be acceptable. Wire color code shall be: Group one - one blue, one brown and one drain wire; Group two - one green and one slate; Group three - one red and one black; Group four - one yellow and one black.

All conductors shall be covered and protected by an outer jacket of polyvinyl chloride with a minimum thickness of 0.025" (0.635mm). The outer jacket shall be smooth and of good appearance. The jacket shall be easily stripped from the cable; but shall be tight enough to permit drawing the cable around sharp bends without the jacket sliding along the core or breaking.

The cable shall bear the Executone trademark with the approved cable model number either embossed or printed on the cable and shall be finished in Executone Standard Metalustre. Additionally, the cable shall be marked to show conformance with "UL Subject 13 for Type CL2" at each place the Executone marking appears. If other than Executone cable is supplied, contractor shall obtain architects' approval after submitting a certified copy of test report on a sample coil of the cable from the lot to be supplied.

TECHNICAL SPECIFICATIONS

CABLE

WN05-1

- ° **UL LISTED PER UL SUBJECT 13 FOR TYPE CL2**
- ° **EASY TO STRIP**
- ° **RODENT RESISTANT OUTER JACKET**
- ° **FLEXIBLE**
- ° **ABRASION RESISTANT**



DESCRIPTION

Cabling containing five conductors arranged in two groups. Conductors polyvinyl chloride (PVC) insulated and protected by an outer jacket.

GAUGE AND TYPE

Group 1 - two insulated #22 gauge solid conductors, twisted together with one #22 gauge bare drain wire, and covered by metallized shielding tape.

Group 2 - two insulated #22 gauge solid conductors twisted together.

ASSEMBLY

Two groups assembled by cabling them together with a 6 inch (15.24cm) left hand lay.

INSULATION

Conductors - colored polyvinyl chloride with minimum thickness of 0.015" (0.381mm).

Outer Jacket - polyvinyl chloride with minimum thickness of 0.020" (0.508mm).

SHIELDING

Metallized tape (lamiglas type) overlapped for 100% shielding. Crosstalk factor of -130 dB or better between shielded pairs.

DC RESISTANCE

22 Gauge - 16.14 ohms maximum per 1,000 feet (304.8m) at 68° F (20° C).

UL LISTED

Cable is UL Listed per subject 13 for Type CL2 cable.

CABLE FINISH

Outer jacket color is Executone Standard Metalustre.

WIRE COLOR CODE

Group 1 - one white, one red, and one bare drain wire;
Group 2 - one green and one black.

OUTSIDE DIAMETER

Cable shall have a maximum outside diameter of 0.230" (5.840mm).

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

WN05-1 CABLE

The WN05-1 Cable shall contain five conductors arranged in two groups. Group one shall consist of one pair of individually insulated #22 gauge solid conductors twisted together with one #22 gauge solid bare drain wire. Group one shall be covered with metallized tape (lamiglas type) overlapped for 100% shielding. Group two shall consist of one pair of individually insulated #22 gauge solid conductors twisted together. The wire shall have been certified to have a crosstalk factor of -130dB or better per 500 foot (152.4m) coil. The two groups shall be assembled by cabling them together with a six inch (15.24cm) left hand lay.

The DC resistance of the #22 gauge conductors shall not be more than 16.14 ohms per thousand feet (304.8m) of conductor at 68° F (20° C). The cable shall be UL Listed per subject 13 for type CL2 cable.

Wire insulation shall be colored polyvinyl chloride (PVC) with a minimum thickness of 0.015" (0.381mm). Cotton or other insulating materials which deteriorate with age shall not be acceptable. Wire color code shall be: Group one - one white, one red and one drain wire; Group two - one green and one black.

All conductors shall be covered and protected by an outer jacket of polyvinyl chloride with a minimum thickness of 0.020" (0.508mm). The outer jacket shall be smooth and of good appearance. The jacket shall be easily stripped from the cable; but shall be tight enough to permit drawing the cable around sharp bends without the jacket sliding along the core or breaking.

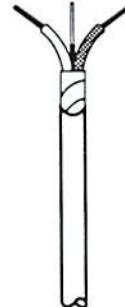
The cable shall bear the Executone trademark with the approved cable model number either embossed or printed on the cable and shall be finished in Executone Standard Metalustre. Additionally, the cable shall be marked to show conformance with "UL Subject 13 for Type CL2" at each place the Executone marking appears. If other than Executone cable is supplied, contractor shall obtain architects' approval after submitting a certified copy of test report on a sample coil of the cable from the lot to be supplied. The outside diameter of the cable shall be 0.230" (5.840mm).

TECHNICAL SPECIFICATIONS

CABLE

WN03-1

- UL LISTED PER UL SUBJECT 13 FOR TYPE CL2
- EASY TO STRIP
- RODENT RESISTANT OUTER JACKET
- FLEXIBLE
- ABRASION RESISTANT



DESCRIPTION

Cabling containing three conductors arranged as one twisted, shielded pair. Conductors polyvinyl chloride (PVC) insulated and protected by an outer jacket.

GAUGE AND TYPE

Two conductors #20 gauge stranded, twisted. One #22 gauge stranded bare drain wire.

ASSEMBLY

The two insulated conductors and the drain wire shall be twisted together with a 1.5 inch (3.81cm) left hand lay.

INSULATION

Conductors - colored polyvinyl chloride with minimum thickness of 0.010" (0.254mm).

Outer Jacket - polyvinyl chloride with minimum thickness of 0.030" (0.762mm).

SHIELDING

Metallized tape (lamiglas type) overlapped for 100% shielding.

DC RESISTANCE

22 Gauge - 16.14 ohms maximum per 1,000 feet (304.8m) at 68° F (20° C).

20 Gauge - 10.15 ohms maximum per 1,000 feet (304.8m) at 68° F (20° C).

UL LISTED

Cable is UL Listed per subject 13 for Type CL2 cable.

CABLE FINISH

Outer jacket color is Executone Standard Metalustre.

WIRE COLOR CODE

One red conductor, one white conductor, and one bare drain wire.

OUTSIDE DIAMETER

Cable shall have a maximum outside diameter of 0.188" (4.775mm).

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

WN03-1 CABLE

The WN03-1 Cable shall contain three conductors arranged as one twisted, shielded pair. Two conductors shall be individually insulated #20 gauge solid twisted together with one #22 gauge stranded bare drain wire. This shielded pair shall be covered with metallized tape (lamiglas type) overlapped for 100% shielding. The two insulated conductors and the bare drain wire shall be twisted together with a one and one-half inch (3.81cm) left hand lay.

The DC resistance of the #22 gauge conductor shall not be more than 16.14 ohms per thousand feet (304.8m) of conductor at 68° F (20° C). The DC resistance of the #20 gauge conductor shall not be more than 10.15 ohms per thousand feet (304.8m) of conductor at 68° F (20° C). The cable shall be UL Listed per subject 13 for type CL2 cable.

Wire insulation shall be colored polyvinyl chloride (PVC) with a minimum thickness of 0.010" (0.254mm). Cotton or other insulating materials which deteriorate with age shall not be acceptable. Wire color code shall be: one red conductor, one white conductor, and one drain wire.

All conductors shall be covered and protected by an outer jacket of polyvinyl chloride with a minimum thickness of 0.030" (0.762mm). The outer jacket shall be smooth and of good appearance. The jacket shall be easily stripped from the cable; but shall be tight enough to permit drawing the cable around sharp bends without the jacket sliding along the core or breaking.

The cable shall bear the Executone trademark with the approved cable model number either embossed or printed on the cable and shall be finished in Executone Standard Metalustre. Additionally, the cable shall be marked to show conformance with "UL Subject 13 for Type CL2" at each place the Executone marking appears. If other than Executone cable is supplied, contractor shall obtain architects' approval after submitting a certified copy of test report on a sample coil of the cable from the lot to be supplied. The outside diameter of the cable shall be 0.188" (4.775mm).

TECHNICAL SPECIFICATIONS

CABLE

WN08-3

- ° **UL LISTED PER UL SUBJECT 13 FOR TYPE CL2**
- ° **EASY TO STRIP**
- ° **RODENT RESISTANT OUTER JACKET**
- ° **FLEXIBLE**
- ° **ABRASION RESISTANT**



DESCRIPTION

Cabling containing four twisted pairs. Conductors polyvinyl chloride (PVC) insulated and protected by an outer jacket.

GAUGE AND TYPE

Eight conductors #24 gauge soft-drawn copper wire.

ASSEMBLY

Each pair twisted together with a 1.5" (3.81cm) left hand lay. Four pairs assembled by twisting together with a 1.5" (3.81cm) left hand lay, covered with clear polyester tape and provided with nylon rip cord.

INSULATION

Conductors - colored polyvinyl chloride with minimum thickness of 0.010" (0.254mm).

Outer Jacket - polyvinyl chloride with minimum thickness of 0.025" (0.635mm).

DC RESISTANCE

24 Gauge - 25.7 ohms maximum per 1,000 feet (304.8m) at 68° F (20° C).

DIELECTRIC STRENGTH TEST

500V RMS, 60Hz, for one minute, between each conductor and all other conductors connected together.

UL LISTED

Cable is UL Listed per subject 13 for Type CL2 cable.

CABLE FINISH

Outer jacket color is Executone Standard Metalustre.

WIRE COLOR CODE

Pair 1 - one red and one green;

Pair 2 - one yellow and one black;

Pair 3 - one white and one blue;

Pair 4 - one brown and one orange

OUTSIDE DIAMETER

Cable shall have a maximum outside diameter of 0.235" (5.969mm).

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

WN08-3 CABLE

The WN08-3 Cable shall contain four twisted pairs. The eight conductors shall be individually insulated #24 gauge soft-drawn copper. Each pair shall be twisted together with a one and one-half inch (3.81cm) left hand lay. The four pairs shall be assembled by twisting them together with a one and one-half inch (3.81cm) left hand lay and covering with clear polyester tape. Additionally, a nylon rip cord shall be provided.

The DC resistance of the #24 gauge conductors shall not be more than 25.7 ohms per thousand feet (304.8m) of conductor at 68° F (20° C). The cable shall be UL Listed per subject 13 for type CL2 cable.

Wire insulation shall be colored polyvinyl chloride (PVC) with a minimum thickness of 0.010" (0.254mm). Cotton or other insulating materials which deteriorate with age shall not be acceptable. Wire color code shall be: Pair one - one red and one green; Pair two - one yellow and one black; Pair three - one white and one blue; Pair four - one brown and one orange.

The conductors shall be covered and protected by an outer jacket of polyvinyl chloride with a minimum thickness of 0.025" (0.635mm). The outer jacket shall be smooth and of good appearance. The jacket shall be easily stripped from the cable; but shall be tight enough to permit drawing the cable around sharp bends without the jacket sliding along the core or breaking.

The cable shall bear the Executone trademark with the approved cable model number either embossed or printed on the cable and shall be finished in Executone Standard Metalustre. Additionally, the cable shall be marked to show conformance with "UL Subject 13 for Type CL2" at each place the Executone marking appears. If other than Executone cable is supplied, contractor shall obtain architects' approval after submitting a certified copy of test report on a sample coil of the cable from the lot to be supplied. The outside diameter of the cable shall be 0.235" (5.969mm).

TECHNICAL SPECIFICATIONS

CABLE

WN08-2

- *UL LISTED PER UL SUBJECT 13 FOR TYPE CL2*
- *EASY TO STRIP*
- *RODENT RESISTANT OUTER JACKET*
- *FLEXIBLE*
- *ABRASION RESISTANT*



DESCRIPTION

Cabling containing eight conductors arranged in three groups. Conductors polyvinyl chloride (PVC) insulated and protected by an outer jacket.

GAUGE AND TYPE

Group 1 - two insulated #22 gauge solid conductors twisted together with one #22 gauge bare drain wire, and covered by metallized shielding tape.

Group 2 - two insulated #22 gauge solid conductors twisted together.

Group 3 - three insulated #18 gauge solid conductors twisted together.

ASSEMBLY

Three groups assembled by cabling them together with a 6 inch (15.24cm) left hand lay.

INSULATION

Conductors - colored polyvinyl chloride with minimum thickness of 0.010" (0.254mm) for #22 gauge; and 0.025" (0.635mm) for #18 gauge.

Outer Jacket - polyvinyl chloride with minimum thickness of 0.025" (0.635mm).

SHIELDING

Metallized tape (lamiglas type) overlapped for 100% shielding.

DC RESISTANCE

22 Gauge - 16.14 ohms maximum per 1,000 feet (304.8m) at 68° F (20° C).

18 Gauge - 6.39 ohms maximum per 1,000 feet (304.8m) at 68° F (20° C).

UL LISTED

Cable is UL Listed per subject 13 for Type CL2 cable.

CABLE FINISH

Outer jacket color is Executone Standard Metalustre.

WIRE COLOR CODE

Group 1 - one orange, one violet, one bare drain wire;

Group 2 - one blue and one brown;

Group 3 - one red, one black and one yellow.

OUTSIDE DIAMETER

Cable shall have a maximum outside diameter of 0.325" (8.255mm).

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

WN08-2 CABLE

The WN08-2 Cable shall contain the eight conductors arranged in three groups. Group one shall consist of one pair of individually insulated #22 gauge solid conductors twisted together with one #22 gauge solid bare drain wire. Group one shall be covered with metallized tape (lamiglas type) spirally wrapped with a minimum overlap of 1/16" (1.588mm), metal side in contact with the bare drain wire. Group two shall consist of two individually insulated #22 gauge solid conductors twisted together. Group three shall consist of two individually insulated #18 gauge solid conductors twisted together. The three groups shall be assembled by cabling them together with a six inch (15.24cm) left hand lay.

The DC resistance of the #22 gauge conductors shall not be more than 16.14 ohms per thousand feet (304.8m) of conductor at 68° F (20° C). The DC resistance of the #18 gauge conductors shall not be more than 6.39 ohms per thousand feet (304.8m) of conductor at 68° F (20° C). The cable shall be UL Listed per subject 13 for type CL2 cable.

Wire insulation shall be colored polyvinyl chloride (PVC) with a minimum thickness of 0.010" (0.254mm) for #22 gauge; and 0.025" (0.635mm) for #14 gauge. Cotton or other insulating materials which deteriorate with age shall not be acceptable. Wire color code shall be: Group one - one orange, one violet and one drain wire; Group two - one blue and one brown; Group three - one red, one black and one yellow.

All conductors shall be covered and protected by an outer jacket of polyvinyl chloride with a minimum thickness of 0.025" (0.635mm). The outer jacket shall be smooth and of good appearance. The jacket shall be easily stripped from the cable; but shall be tight enough to permit drawing the cable around sharp bends without the jacket sliding along the core or breaking.

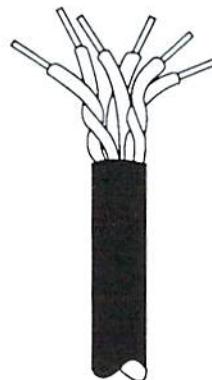
The cable shall bear the Executone trademark with the approved cable model number either embossed or printed on the cable and shall be finished in Executone Standard Metalustre. Additionally, the cable shall be marked to show conformance with "UL Subject 13 for Type CL2" at each place the Executone marking appears. If other than Executone cable is supplied, contractor shall obtain architects' approval after submitting a certified copy of test report on a sample coil of the cable from the lot to be supplied. The outside diameter of the cable shall be 0.325" (8.255mm).

TECHNICAL SPECIFICATIONS

CABLE

WN06-1

- **UL LISTED PER UL SUBJECT 13 FOR TYPE CL2**
- **EASY TO STRIP**
- **RODENT RESISTANT OUTER JACKET**
- **FLEXIBLE**
- **ABRASION RESISTANT**



DESCRIPTION

Cabling containing three twisted pairs. Conductors polyvinyl chloride (PVC) insulated and protected by an outer jacket.

GAUGE AND TYPE

Six conductors #22 gauge soft-drawn copper wire.

ASSEMBLY

Each pair twisted together with a 1.5" (3.81cm) left hand lay. Three pairs assembled by twisting together with staggered lays no greater than 6" (15.24cm).

INSULATION

Conductors - colored polyvinyl chloride with minimum thickness of 0.016" (0.406mm).

Outer Jacket - polyvinyl chloride with minimum thickness of 0.030" (0.762mm).

DC RESISTANCE

22 Gauge - 16.14 ohms maximum per 1,000 feet (304.8m) at 68° F (20° C).

UL LISTED

Cable is UL Listed per subject 13 for Type CL2 cable.

CABLE FINISH

Outer jacket color is Executone Standard Metalustre.

WIRE COLOR CODE

Pair 1 - one blue and one white;

Pair 2 - one orange and one white;

Pair 3 - one green and one white;

OUTSIDE DIAMETER

Cable shall have a maximum outside diameter of 0.320" (8.128mm).

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

WN06-1 CABLE

The WN06-1 Cable shall contain three twisted pairs. The six conductors shall be individually insulated #22 gauge soft-drawn copper. Each pair shall be twisted together with a one and one-half inch (3.81cm) left hand lay. The three pairs shall be assembled by twisting them together with a six inch (15.24cm) left hand lay.

The DC resistance of the #22 gauge conductors shall not be more than 16.14 ohms per thousand feet (304.8m) of conductor at 68° F (20° C). The cable shall be UL Listed per subject 13 for type CL2 cable.

Wire insulation shall be colored polyvinyl chloride (PVC) with a minimum thickness of 0.016" (0.406mm). Cotton or other insulating materials which deteriorate with age shall not be acceptable. Wire color code shall be: Pair one - one blue and one white; Pair two - one orange and one white; Pair three - one green and one white.

The conductors shall be covered and protected by an outer jacket of polyvinyl chloride with a minimum thickness of 0.030" (0.762mm). The outer jacket shall be smooth and of good appearance. The jacket shall be easily stripped from the cable; but shall be tight enough to permit drawing the cable around sharp bends without the jacket sliding along the core or breaking.

The cable shall bear the Executone trademark with the approved cable model number either embossed or printed on the cable and shall be finished in Executone Standard Metalustre. Additionally, the cable shall be marked to show conformance with "UL Subject 13 for Type CL2" at each place the Executone marking appears. If other than Executone cable is supplied, contractor shall obtain architects' approval after submitting a certified copy of test report on a sample coil of the cable from the lot to be supplied. The outside diameter of the cable shall be 0.320" (8.128mm).

TECHNICAL SPECIFICATIONS

CABLE

WN03-2

- UL LISTED PER UL SUBJECT 13 FOR TYPE CL2
- EASY TO STRIP
- RODENT RESISTANT OUTER JACKET
- FLEXIBLE
- ABRASION RESISTANT



DESCRIPTION

Cabling containing three twisted conductors. Conductors polyvinyl chloride (PVC) insulated and protected by an outer jacket.

GAUGE AND TYPE

Three conductors #20 gauge consisting of 7 strands of #28 gauge soft-drawn copper wire, bunch stranded with a maximum lay of 7/8" (2.22cm).

ASSEMBLY

Three insulated conductors twisted together with a 1-1/2" (3.81cm) left hand lay.

INSULATION

Conductors - colored polyvinyl chloride with minimum thickness of 0.016" (0.254mm).

Outer Jacket - polyvinyl chloride with minimum thickness of 0.030" (0.762mm).

DC RESISTANCE

20 Gauge - 10.15 ohms maximum per 1,000 feet (304.8m) at 68° F (20° C).

UL LISTED

Cable is UL Listed per subject 13 for Type CL2 cable.

CABLE FINISH

Outer jacket color is Executone Standard Metalustre.

WIRE COLOR CODE

One red conductor; one black conductor; one white conductor.

OUTSIDE DIAMETER

Cable shall have a maximum outside diameter of 0.220" (5.588mm).

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

WN03-2 CABLE

The WN03-2 Cable shall contain three twisted conductors. The three conductors shall be individually insulated #20 gauge consisting of 7 strands of #28 gauge soft-drawn copper, bunch stranded with a maximum lay of 7/8" (2.22cm). The three insulated conductors shall be twisted together with a one and one-half inch (3.81cm) left hand lay.

The DC resistance of the #20 gauge conductors shall not be more than 10.15 ohms per thousand feet (304.8m) of conductor at 68° F (20° C). The cable shall be UL Listed per subject 13 for type CL2 cable.

Wire insulation shall be polyvinyl chloride (PVC) with a minimum thickness of 0.016" (0.254mm). Cotton or other insulating materials which deteriorate with age shall not be acceptable. Wire color code shall be: one red conductor, one black conductor, and one white conductor.

The conductors shall be covered and protected by an outer jacket of polyvinyl chloride with a minimum thickness of 0.030" (0.762mm). The outer jacket shall be smooth and of good appearance. The jacket shall be easily stripped from the cable; but shall be tight enough to permit drawing the cable around sharp bends without the jacket sliding along the core or breaking.

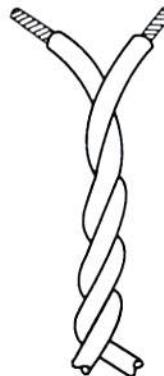
The cable shall bear the Executone trademark with the approved cable model number either embossed or printed on the cable and shall be finished in Executone Standard Metalustre. Additionally, the cable shall be marked to show conformance with "UL Subject 13 for Type CL2" at each place the Executone marking appears. If other than Executone cable is supplied, contractor shall obtain architects' approval after submitting a certified copy of test report on a sample coil of the cable from the lot to be supplied. The outside diameter of the cable shall be 0.220" (5.588mm).

TECHNICAL SPECIFICATIONS

CABLE

WN02-3

- *UL LISTED PER UL SUBJECT 13 FOR TYPE CL2*
- *EASY TO STRIP*
- *RODENT RESISTANT INSULATION*
- *FLEXIBLE*
- *ABRASION RESISTANT*



DESCRIPTION

Cabling containing one twisted pair. Conductors polyvinyl chloride (PVC) insulated.

GAUGE AND TYPE

Two conductors #16 gauge consisting of 26 strands of #30 gauge soft-drawn copper wire, bunch stranded with a maximum lay of 1" (2.54cm).

ASSEMBLY

Two insulated conductors twisted together with a 3" (7.62cm) left hand lay.

INSULATION

Two conductors polyvinyl chloride insulated with minimum thickness of 0.031" (0.793mm).

DC RESISTANCE

16 Gauge - 4.02 ohms maximum per 1,000 feet (304.8m) at 68° F (20° C).

UL LISTED

Cable is UL Listed per subject 13 for Type CL2 cable.

CABLE FINISH

Insulation color is Executone Standard Metalustre.

WIRE COLOR CODE

One conductor bare; one conductor tinned.

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

WN02-3 CABLE

The WN02-3 Cable shall contain one twisted pair of conductors. The two conductors shall be individually insulated #16 gauge consisting of 26 strands of #30 gauge soft-drawn copper, bunch stranded with a maximum lay of one inch (2.54cm). The two insulated conductors shall be twisted together with a three inch (7.62cm) left hand lay.

The DC resistance of the #16 gauge conductors shall not be more than 4.02 ohms per thousand feet (304.8m) of conductor at 68° F (20° C). The cable shall be UL Listed per subject 13 for type CL2 cable.

Wire insulation shall be polyvinyl chloride (PVC) with a minimum thickness of 0.031" (0.793mm). Cotton or other insulating materials which deteriorate with age shall not be acceptable. Wire color code shall be: one conductor bare, and one conductor tinned.

The cable shall bear the Executone trademark with the approved cable model number either embossed or printed on the cable and shall be finished in Executone Standard Metalustre. Additionally, the cable shall be marked to show conformance with "UL Subject 13 for Type CL2" at each place the Executone marking appears. If other than Executone cable is supplied, contractor shall obtain architects' approval after submitting a certified copy of test report on a sample coil of the cable from the lot to be supplied. The outside diameter of the cable shall be 0.203" (5.156mm).

TECHNICAL SPECIFICATIONS

CABLE

WN02-2

- *UL LISTED PER UL SUBJECT 13 FOR TYPE CL2*
- *EASY TO STRIP*
- *RODENT RESISTANT OUTER JACKET*
- *FLEXIBLE*
- *ABRASION RESISTANT*



DESCRIPTION

Cabling containing two twisted conductors. Conductors polyvinyl chloride (PVC) insulated and protected by an outer jacket.

GAUGE AND TYPE

Two conductors #20 gauge consisting of 7 strands of #28 gauge soft-drawn copper wire, bunch stranded with a maximum lay of 7/8" (2.22cm).

ASSEMBLY

Two insulated conductors twisted together with a 1-1/2" (3.81cm) left hand lay.

INSULATION

Conductors - colored polyvinyl chloride with minimum thickness of 0.016" (0.254mm).

Outer Jacket - polyvinyl chloride with minimum thickness of 0.030" (0.762mm).

DC RESISTANCE

20 Gauge - 10.15 ohms maximum per 1,000 feet (304.8m) at 68° F (20° C).

UL LISTED

Cable is UL Listed per subject 13 for Type CL2 cable.

CABLE FINISH

Outer jacket color is Executone Standard Metalustre.

WIRE COLOR CODE

One red conductor; one black conductor.

OUTSIDE DIAMETER

Cable shall have a maximum outside diameter of 0.203" (5.156mm).

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

WN02-2 CABLE

The WN02-2 Cable shall contain two twisted conductors. The two conductors shall be individually insulated #20 gauge consisting of 7 strands of #28 gauge soft-drawn copper, bunch stranded with a maximum lay of 7/8" (2.22cm). The two insulated conductors shall be twisted together with a one and one-half inch (3.81cm) left hand lay.

The DC resistance of the #20 gauge conductors shall not be more than 10.15 ohms per thousand feet (304.8m) of conductor at 68° F (20° C). The cable shall be UL Listed per subject 13 for type CL2 cable.

Wire insulation shall be polyvinyl chloride (PVC) with a minimum thickness of 0.016" (0.254mm). Cotton or other insulating materials which deteriorate with age shall not be acceptable. Wire color code shall be: one red conductor, and one black conductor.

The conductors shall be covered and protected by an outer jacket of polyvinyl chloride with a minimum thickness of 0.030" (0.762mm). The outer jacket shall be smooth and of good appearance. The jacket shall be easily stripped from the cable; but shall be tight enough to permit drawing the cable around sharp bends without the jacket sliding along the core or breaking.

The cable shall bear the Executone trademark with the approved cable model number either embossed or printed on the cable and shall be finished in Executone Standard Metalustre. Additionally, the cable shall be marked to show conformance with "UL Subject 13 for Type CL2" at each place the Executone marking appears. If other than Executone cable is supplied, contractor shall obtain architects' approval after submitting a certified copy of test report on a sample coil of the cable from the lot to be supplied. The outside diameter of the cable shall be 0.203" (5.156mm).

TECHNICAL SPECIFICATIONS

CABLE

WN02-1

- *UL LISTED PER UL SUBJECT 13 FOR TYPE CL2*
- *EASY TO STRIP*
- *RODENT RESISTANT INSULATION*
- *FLEXIBLE*
- *ABRASION RESISTANT*



DESCRIPTION

Cabling containing two conductors laid parallel. Conductors polyvinyl chloride (PVC) insulated.

GAUGE AND TYPE

Two conductors #22 gauge soft-drawn copper.

INSULATION

Two conductors polyvinyl chloride insulated with minimum thickness of 0.016" (0.254mm). Valley sufficient to permit ripping apart and leaving 0.010" (0.254mm) minimum insulation.

DC RESISTANCE

22 Gauge - 16.14 ohms maximum per 1,000 feet (304.8m) at 68° F (20° C).

UL LISTED

Cable is UL Listed per subject 13 for Type CL2 cable.

CABLE FINISH

Insulation color is Executone Standard Metalustre.

WIRE COLOR CODE

One conductor bare; One conductor tinned.

OUTSIDE DIMENSIONS

Cable shall have maximum dimensions of 0.064" (1.626mm) x 0.123" (3.124mm).

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

WN02-1 CABLE

The WN02-1 Cable shall contain two conductors laid parallel. The two conductors shall be insulated #22 gauge soft-drawn copper.

The DC resistance of the #22 gauge conductors shall not be more than 16.14 ohms per thousand feet (304.8m) of conductor at 68° F (20° C). The cable shall be UL Listed per subject 13 for type CL2 cable.

Wire insulation shall be polyvinyl chloride (PVC) with a minimum thickness of 0.016" (0.254mm). Cotton or other insulating materials which deteriorate with age shall not be acceptable. Wire color code shall be: one conductor bare, and one conductor tinned. The valley shall be sufficient to permit ripping apart and leaving 0.010" (0.254mm) minimum insulation.

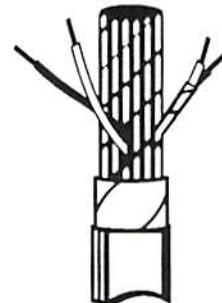
The cable shall bear the Executone trademark with the approved cable model number either embossed or printed on the cable and shall be finished in Executone Standard Metalustre. Additionally, the cable shall be marked to show conformance with "UL Subject 13 for Type CL2" at each place the Executone marking appears. If other than Executone cable is supplied, contractor shall obtain architects' approval after submitting a certified copy of test report on a sample coil of the cable from the lot to be supplied. The maximum dimensions of the cable shall be 0.064" (1.626mm) x 0.123" (3.124mm).

TECHNICAL SPECIFICATIONS

CABLE

W14VS

- ° EASY TO STRIP
- ° RODENT RESISTANT OUTER JACKET
- ° FLEXIBLE
- ° ABRASION RESISTANT
- ° RESISTANT TO CRUSHING AND COLD FLOW



DESCRIPTION

Cabling containing 13 twisted, shielded pairs, and 1 twisted pair. Conductors, polyethylene insulated and protected by an outer jacket.

GAUGE AND TYPE

One pair #16 gauge solid, twisted; thirteen pairs #22 gauge solid, twisted and shielded; one #22 gauge bare drain wire.

INSULATION

Conductors - polyethylene with minimum thickness of 0.015" (0.381mm) for #16 gauge; and 0.011" (0.279mm) for #22 gauge.

Outer Jacket - polyvinyl chloride (PVC) with minimum thickness of 0.40" (10.16mm).

SHIELDING

Metallized tape (lamiglas type) overlapped for 100% shielding.

CROSSTALK FACTOR

-120 db or better between shielded pairs.

DC RESISTANCE

16 Gauge - 7 ohms maximum per 1,000 feet (304.8m) at 68° F (20° C).

22 Gauge - 18 ohms maximum per 1,000 feet (304.8m) at 68° F (20° C).

VOLTAGE TEST

500 volts r.m.s. 60 Hz test for not less than ¼ second after immersion in water for 24 hours.

CAPACITANCE

0.030 mfd. per 1,000 feet (304.8m) at 1,000 Hz.

CABLE FINISH

Outer jacket color is Executone Standard Metalustre.

WIRE COLOR CODE

1 Pair 16 Gauge Twisted Only:	Red-Black
13 Pairs 22 Gauge Twisted, Shielded:	Orange-White
Green-White	Brown-White
Red-White	Blue-Red
Green-Red	Brown-Red
Blue-Black	Orange-Black
	Green-Black

OUTSIDE DIAMETER

Cable shall have a maximum outside diameter of 0.550", (13.97mm).

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

W14VS CABLE

The W14VS Cable shall contain thirteen twisted, shielded pairs, one twisted pair, and one #22 gauge drain wire. The thirteen pairs shall be #22 gauge solid; the single pair shall be #16 gauge solid.

The DC resistance of the #22 gauge conductors shall not be more than 18 ohms per thousand feet (304.8m) of conductor at 68° F (20° C). The DC resistance of the #16 gauge conductors shall be not more than 7 ohms per thousand feet (304.8m) of conductor at 68° F (20° C).

Wire insulation shall be polyethylene plastic with a minimum thickness of 0.015" (0.381mm) for #16 gauge; and 0.011" (0.279mm) for #22 gauge. Cotton or other insulating materials which deteriorate with age shall not be acceptable. Each shielded pair shall be covered with metalized tape (lamiglas type) overlapped for 100% shielding.

All conductors shall be covered and protected by an outer jacket of polyvinyl chloride (PVC) with a minimum thickness of 0.40" (10.16mm). The outer jacket shall be smooth and of good appearance. The jacket shall be easily stripped from the cable; but shall be tight enough to permit drawing the cable around sharp bends without the jacket sliding along the core or breaking.

The cable shall be certified to have a crosstalk factor of -120 db or better (500 foot coil). The mutual capacitance shall not be more than 0.030 microfarad per thousand feet (304.8m) when measured at a frequency of approximately 1,000 Hz.

An alternating voltage of 500 volts r.m.s. at a frequency of 60 Hz shall be applied between each conductor and the other conductors and shielding tapes connected together for a period of not less than one-quarter ($\frac{1}{4}$) of a second without causing rupture of the insulation and shield. It shall be possible for a coil of finished cable ten (10) feet (3.048m) long to satisfy the voltage test after immersion in water at room temperature for a period of 24 hours.

The cable shall bear the Executone trademark either embossed or printed on the cable and shall be finished in Executone Standard Metalustre.. If other than Executone cable is to be supplied, contractor shall obtain architect's approval after submitting a certified copy of the test report on a sample coil of the cable from the lot to be supplied. The outside diameter of the cable shall be 0.550" (13.97mm).

TECHNICAL SPECIFICATIONS

CABLE

WWC7 & WWC14



WWC7 CABLE

DESCRIPTION

Cable containing 7 twisted pairs (14 conductors total). Conductors are polyethylene insulated and protected by outer jacket.

GAUGE AND TYPE

All conductors #22 gauge solid bare copper.

INSULATION

Conductors - polyethylene with minimum thickness of 0.010" (0.254mm).

Outer Jacket - polyvinyl chloride (PVC) with minimum thickness 0.028" (0.711mm).

DC RESISTANCE

18 ohms maximum per 1,000' (304.8m) at 68° F (20° C).

UL LISTED

Listed as inter-office communication & signaling cable.

CABLE FINISH

Outer jacket color is Executone standard Metalustre.

WIRE COLOR CODE

7 Twisted Pairs:	Blue-White	Orange-White	Green-White
	Brown-White	Slate-White	
	Red-White	Blue-Red	
		Brown-Red	Green-Red

OUTSIDE DIAMETER

Maximum outside diameter of 0.365" (9.271mm).



WWC14 CABLE

DESCRIPTION

Cable containing 14 twisted pairs (28 conductors total). Conductors are polyethylene insulated and protected by outer jacket.

GAUGE AND TYPE

All conductors #22 gauge solid bare copper.

INSULATION

Conductors - polyethylene with minimum thickness of 0.010" (0.254mm).

Outer Jacket - polyvinyl chloride (PVC) with minimum thickness 0.035" (0.889mm).

DC RESISTANCE

18 ohms maximum per 1,000' (304.8m) at 68° F (20° C).

UL LISTED

Listed as inter-office communication & signaling cable.

CABLE FINISH

Outer jacket color is Executone standard Metalustre.

WIRE COLOR CODE

14 Twisted Pairs:	Blue-White	Orange-White
	Green-White	Brown-White
	Red-White	Blue-Red
	Brown-Red	Green-Red
	Blue-Black	Orange-Black

OUTSIDE DIAMETER

Maximum outside diameter of 0.490" (12.496mm).

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

WWC7 CABLE

The WWC7 Cable shall contain seven twisted pairs. All conductors shall be #22 gauge solid bare copper and shall be individually insulated with polyethylene plastic.

The DC resistance of the #22 gauge conductors shall not be more than 18 ohms per 1,000' (304.8m) of conductor at 68° F (20° C). The cable shall be Underwriters' Laboratories, Inc., listed as inter-office communication and signaling cable.

Wire insulation shall be polyethylene plastic with a minimum thickness of 0.010" (0.254mm). Cotton or other insulating materials which deteriorate with age shall not be acceptable.

All conductors shall be covered and protected by an outer jacket of polyvinyl chloride (PVC) with a minimum thickness of 0.028" (0.711mm). The outer jacket shall be smooth and of good appearance. The jacket shall be easily stripped from the cable; but shall be tight enough to permit drawing the cable around sharp bends without the jacket sliding along the core or breaking.

The cable shall bear the Executone trademark either embossed or printed on the cable and shall be finished in Executone Standard Metalustre.. If other than Executone cable is to be supplied, contractor shall obtain architect's approval after submitting a certified copy of the test report on a sample coil of the cable from the lot to be supplied. The outside diameter of the cable shall be 0.365" (9.271mm).

WWC14 CABLE

The WWC14 Cable shall contain fourteen twisted pairs. All conductors shall be #22 gauge solid bare copper and shall be individually insulated with polyethylene plastic.

The DC resistance of the #22 gauge conductors shall not be more than 18 ohms per 1,000' (304.8m) of conductor at 68° F (20° C). The cable shall be Underwriters' Laboratories, Inc., listed as inter-office communication and signaling cable.

Wire insulation shall be polyethylene plastic with a minimum thickness of 0.010" (0.254mm). Cotton or other insulating materials which deteriorate with age shall not be acceptable.

All conductors shall be covered and protected by an outer jacket of polyvinyl chloride (PVC) with a minimum thickness of 0.035" (0.889mm). The outer jacket shall be smooth and of good appearance. The jacket shall be easily stripped from the cable; but shall be tight enough to permit drawing the cable around sharp bends without the jacket sliding along the core or breaking.

The cable shall bear the Executone trademark either embossed or printed on the cable and shall be finished in Executone Standard Metalustre.. If other than Executone cable is to be supplied, contractor shall obtain architect's approval after submitting a certified copy of the test report on a sample coil of the cable from the lot to be supplied. The outside diameter of the cable shall be 0.490" (12.496mm).

Technical Facts

— EXECUTONE —

CARE/COM and CARE/COM II
Nurse Call System

No. 1693
July 11, 1990
For All EXECUTONE Distributors

NEW INFORMATION ON EXECUTONE BRAND CABLING FOR CARE/COM AND CARE/COM II SYSTEMS

1. INTRODUCTION

This Technical Fact supercedes TF1678 by providing more information on the new Executone brand cabling relative to the Care/Com and Care/Com II Nurse Call Systems. As mentioned in TF1678, the new cabling is UL Listed for Type CL2 cabling and is designed to meet more stringent regulatory codes thereby increasing overall quality.

The information in this Technical Fact is more comprehensive, including complete cable comparisons, cabling guidelines for maximum lengths, use of conduit, etc. and applies to all Care/Com and Care/Com II Installations in which the new cables will be utilized.

Note that the new cables replace the cables shown in the Care/Com & Care/Com II Product and Technical Manuals in the following sections:

the plans in Section 400 (Design & Configuration) and
the installation hookups in Sections 610 through 630 - Care/Com II
the installation hookups in TB1697B and TB1728A - Care/Com

Refer to the new cables according to the following information.

- continued -

File a copy of this Technical Facts in your Master Technical Facts file, in your Care/Com Technical Manual, part number 2314D and Product Manual, part number 2313B, and in your Care/Com II Technical Manual, part number 3083101A and Product Manual, part number 3082901A. Also list it on the Record of Changes page.

Healthcare
Product Management

Attachments: Cable Technical Specifications (12)

1.1 Wire and Cable Model Numbers

Note to specification writer: Specify the wire and cable required for system being specified using the new cabling.

WN09-1 Cable (refer to Technical Specification No. TS40976).
WN08-3 Cable (refer to Technical Specification No. TS40979).
WN08-2 Cable (refer to Technical Specification No. TS40980).
WN06-1 Cable (refer to Technical Specification No. TS40981).
WN05-1 Cable (refer to Technical Specification No. TS40977).
WN03-2 Cable (refer to Technical Specification No. TS40982).
WN03-1 Cable (refer to Technical Specification No. TS40978).
WN02-3 Cable (refer to Technical Specification No. TS40983).
WN02-2 Cable (refer to Technical Specification No. TS40984).
WN02-1 Cable (refer to Technical Specification No. TS40985).
WWC7 Cable (refer to Technical Specification No. TS1360).

Refer to Tables 1 through 5 to see how the new cables replace the previous cables. You'll notice that in many instances, the new cable matches exactly with the previous cable according to wire colors and gauge.

Table 1. Cable Comparison for Care/Com II Nurse Control Station

FUNCTION	WN09-1 ¹ /WN05-1 ²	WS11 ³ /WS5 ⁴
+24 Volts	Green 22 AWG ²	Green 22 AWG ⁴
+12 Volts	Red 14 AWG ¹ , Yellow 14 AWG ¹	Red 16 AWG ³ , Yellow 16 AWG ³
Digital Ground	Black 14 AWG (2) ¹	Black 14 AWG ³ , White 14 AWG ³ Blue 22 AWG ¹ , Brown 22 AWG ³
Analog Ground	Shield 22 AWG ¹ , Black 22 AWG ²	Shield 22 AWG ³ , Black 22 AWG ⁴
Serial Data 1	Blue 22 AWG ¹	Orange 22 AWG ³
Serial Data 2	Brown 22 AWG ¹	Violet 22 AWG ³
Duty	Slate 22 AWG ¹	Slate 22 AWG ³
External Reset	Green 22 AWG ¹	Green 22 AWG ³
IC Hot	Red 22 AWG ²	Red 22 AWG ⁴
IC Ground	White 22 AWG ²	White 22 AWG ⁴
Shield	Shield 22 AWG ²	Shield 22 AWG ⁴

Table 2. Cable Comparison for Care/Com Nurse Control Station

FUNCTION	WN08-2	WCCS8
+24 Volts	Red 18 AWG, Yellow 18 AWG	Red 18 AWG, Yellow 18 AWG
-24 Volts	Black 18 AWG	Black 18 AWG
Duty	Brown 22 AWG	Brown 22 AWG
Busy	Blue 22 AWG	Blue 22 AWG
IC Hot	Orange 22 AWG	Orange 22 AWG
IC Ground	Violet 22 AWG, Shield 22 AWG	Violet 22 AWG, Shield 22 AWG

All other connections via standard double-ended 25 pair cable.

Table 3. Cable Comparison for Common Run (Care/Com and Care/Com II)

FUNCTION	WN08-2	WCCS8
+24 Volts Common	Red 18 AWG	Red 18 AWG
-24 Volts Hot	Yellow 18 AWG	Yellow 18 AWG
-24 Volts Flashing	Black 18 AWG	Black 18 AWG
Duty	Brown 22 AWG	Brown 22 AWG
Page Common	Blue 22 AWG	Blue 22 AWG
IC Hot	Orange 22 AWG	Orange 22 AWG
IC Ground	Violet 22 AWG	Violet 22 AWG
Shield	Shield 22 AWG	Shield 22 AWG

Table 4. Cable Comparison for Home Run (Care/Com and Care/Com II)

FUNCTION	WN02-1	WS2
Control	Tinned 22 AWG	Tinned 22 AWG
Announce	Copper 22 AWG	Copper 22 AWG

Table 5. Cable Comparison for Dome Lamp (Care/Com and Care/Com II)

FUNCTION	WN03-2 ¹ /WN02-1 ²	WT3V ¹ /WS2 ²
+24 Volts	Red 20 AWG ¹ /Copper 22 AWG ²	Red 20 AWG ¹ /Copper 22 AWG ²
Normal Call Dome ¹	White 20 AWG ¹	White 20 AWG ¹
Emergency Call Dome ¹	Black 20 AWG ¹	Black 20 AWG ¹
Normal & Emergency Dome ²	Tinned 22 AWG ²	Tinned 22 AWG ²

¹ For two-lamp dome lamp.

² For one-lamp care light.

Table 6. Cable Comparison for Peripherals (Care/Com and Care/Com II)

FUNCTION	WN06-1	WWC3
+24 Volts	Orange 22 AWG	Orange 22 AWG
-24 Volts Flashing	White 22 AWG	White 22 AWG
Annunciate (to Pat. Sta.)	Green 22 AWG	Green 22 AWG
Annunciate (to Eq. Cabinet)	White 22 AWG	White 22 AWG
Emergency Call Dome	White 22 AWG	White 22 AWG
Care-Light ¹	Blue 22 AWG	Blue 22 AWG

Unused Conductors

WN06-1: Blue, only in applications with two-lamp dome lamp.

WWC3: Blue, only in applications with two-lamp dome lamp.

¹ For one-lamp care light applications only.

Table 7. Cable Comparison for Entertainment (Care/Com II)

FUNCTION	WN08-3 ¹ /WN05-1 ²	W4P ³ /WS5 ⁴
Radio Control No. 1	Brown 24 AWG ¹	Brown 24 AWG ³
TV Control No. 1	Red 24 AWG ¹	Red 24 AWG ³
Ent Ground No. 1	Yellow 24 AWG ¹	Yellow 24 AWG ³
Ent Hot No. 1	Green 24 AWG ¹	Green 24 AWG ³
Radio Control No. 2	Black 22 AWG ²	Black 22 AWG ⁴
TV Control No. 2	Green 22 AWG ²	Green 22 AWG ⁴
Ent Ground No. 2	White 22 AWG ²	White 22 AWG ⁴
Ent Hot No. 2	Red 22 AWG ²	Red 22 AWG ⁴
Ground	Orange 24 AWG ¹ /Shield 22 AWG ²	Orange 24 AWG ³ /Shield 22 AWG ⁴

Unused Conductors

WN08-3: Blue, White, Black

W4P: Blue, White, Black

WN05-1 (replacing WS5) only required for dual patient stations.

Table 8. Cable Comparison for Entertainment (Care/Com)

FUNCTION	WN05-1 ¹ /WN05-1 ²	WS5 ³ /WS5 ⁴
Radio Control No. 1	Shield 22 AWG ¹	Shield 22 AWG ³
TV Control No. 1	Green 22 AWG ¹	Green 22 AWG ³
Ent Ground No. 1	White 22 AWG ¹	White 22 AWG ³
Ent Hot No. 1	Red 22 AWG ¹	Red 22 AWG ³
Radio Control No. 2	Shield 22 AWG ²	Shield 22 AWG ⁴
TV Control No. 2	Green 22 AWG ²	Green 22 AWG ⁴
Ent Ground No. 2	White 22 AWG ²	White 22 AWG ⁴
Ent Hot No. 2	Red 22 AWG ²	Red 22 AWG ⁴
Ground	Black 22 AWG ¹ /Black 22 AWG ²	Black 22 AWG ³ /Black 22 AWG ⁴

^{2&4}Second WN05-1 (replacing WS5) only required for dual patient stations.

Table 9. Cable Comparison for Zone Control Module

FUNCTION	WN08-2 ¹ /WN03-2 ²	WCCS8 ³ /WT3V ⁴
Dome (H)	White 20 AWG ²	White 20 AWG ⁴
-24 Volts Hot In	Yellow 18 AWG ¹ (in)	Yellow 18 AWG ³ (in)
-24 Volts Hot Patient	Yellow 18 AWG ¹ (out)	Yellow 18 AWG ³ (out)
24 Volts Flashing In	Black 18 AWG ¹ (in)	Black 18 AWG ³ (in)
24 Volts Flashing Patient	Black 18 AWG ¹ (out)	Black 18 AWG ³ (out)
Dome (F)	Black 20 AWG ²	Black 20 AWG ⁴

Only connections to zone control module are referenced.

1.2 Using Executone Brand Wire and Cable

A large portion of an installation consists of connecting various equipment using cables and wires. It is very important that all wiring and cabling requirements are met. Use only the recommended type of "Approved Executone Brand" wire and cable necessary for the installation. Using the correct wire and cable will ensure proper system performance and increased reliability.

Executone cannot support or warranty any product/system or its performance if installed using non-approved wire and cable.

Executone Brand cable has been specifically designed for the Care/Com and Care/Com II Systems to assure optimum operating performance and must be used in all installations. This includes new installations and for replacing other systems with the Executone Care/Com or Care/Com II .

2. CABLE ROUTING

The common cabling for patient, staff or duty stations can be routed to the central equipment cabinet by either of two methods, or by a combination of the two. The two methods of cable routing are: dome-to-dome cabling and station-to-station cabling.

NOTE: The recommended cabling method is the dome-to-dome method; see the paragraphs below.

For proper system performance, cabling should be routed through the proper conduit as per Paragraph 4.

2.1 Dome-To-Dome Cabling

This is the recommended method of cabling. The common cabling is routed through the dome lamp backboxes. Separate cable lengths are installed between each dome lamp and its respective station unit.

Dome lamp junctions are closer together on average than the station units. This means the total continuous length of the common cabling to the last station is much shorter in the dome-to-dome cabling method than in the station-to-station method (excluding the cable lengths between dome lamps and stations).

2.2 Station-To-Station Cabling

NOTE: Because of inherent limitations, the station-to-station cabling method is not recommended.

In this method, the common cabling is routed through each station unit. Therefore, the total continuous length of the common cabling is usually longer. Also, the cabling running in and out of the station unit requires more backbox space. If station-to-station is required, contact the Field Service Department for specific cabling information.

3. CABLING CAPACITY

There are three basic types of cable runs originating from the central equipment: nurse control station cable run, common cable run, and a home run to each patient, staff and duty station in the system. For each type, there are certain requirements which must be observed. See paragraphs 3.1 and 3.2.

3.1 Nurse Control Station Cable Requirements

The nurse control station is connected to the central equipment with its own independent cable run. In Care/Com II installations, additional wires may need to be added to this cable run. This is dependant on certain conditions such as cable length, etc. Table 10 provides the distance when the wires need to be added.

Table 10. Nurse Control Station Cable Run Requirements (Care/Com II)

CABLE LENGTH	ADD EXTRA WIRES FOR:			
	DIGITAL GND	+12V	+24V	ANALOG GND
401' - 600'	1 #16 AWG	1 #16 AWG	1 #18 AWG	1 #18 AWG
601' - 1000'	1 #12 AWG	1 #12 AWG	1 #16 AWG	1 #16 AWG

NOTE: All extra wires and cables must conform to NEC and/or local codes whichever is most stringent.

The distance is based on cable footage from the equipment panel to the nurse control station.

3.2 Common Cable and Home Run Cable Requirements

A maximum combination of 60 patient, staff and duty stations may be connected to an equipment panel (a 60 station nurse control station is required for a system configured to the maximum number of 60 stations). These stations units are connected to the equipment panel in a configuration consisting of up to 6 common cables. Each common cable run can support a maximum of 10 station units. In addition to the common cable, each station requires an individual home run cable connected to the central equipment.

4. CONDUIT REQUIREMENTS

It is recommended that all Executone System cabling be run through metallic conduit. If system cabling is run in an open cable tray instead of metallic conduit, all system cabling should be partitioned off from any other cables in the tray or separated to the greatest extent possible.

CAUTION: System cabling should not be placed in the same pipe, conduit, or compartment containing other electrical systems, high voltage wiring, or coaxial wiring that generates RF interference such as: MATV, CATV, CCTV, broadband, and pocket page (UHF, VHF and low band).

CAUTION: Do not run low and high level audio lines in the same conduit.

For proper system performance, the correct conduit must be used for the cabling runs. Use Table 11 to determine the conduit requirements when running the cabling for a new installation or for a retrofit installation. The following paragraphs explain how to read Table 11. Again, system cabling must not be placed in the same pipe, conduit or compartment containing other electrical wiring.

Listed to the left of Table 11, reading from top to bottom, are the new Executone cables and wires with factor numbers. The factor numbers are based on the area within the circumference of each cable and wire.

Listed across the bottom of the table are conduit sizes ranging from 1/2" to 3". Next to each conduit size is the appropriate conduit factor number for the conduit area based on 40% fill.

The remainder of the table shows the maximum number of same type wire or cable to be run in the conduit based on 40% fill.

Table 11. Conduit Size Chart for Executone Cables and Wires

CABLE AND WIRE TYPE	FACTOR #	MAXIMUM NUMBER OF SAME TYPE CABLE OR WIRE IN A CONDUIT							
		9	18	28	50	68	112	200	266
WN02-1	0.75	9	18	28	50	68	112	200	266
WN02-2	2	3	7	10	19	25	42	75	100
WN02-3	3	2	4	7	12	17	28	50	66
WN03-1	2	3	7	10	19	25	42	75	100
WN03-2	3	2	4	7	12	17	28	50	66
WN05-1	3	2	4	7	12	17	28	50	66
WN06-1	5	1	2	4	7	10	16	30	40
WN08-2*	6	1	1	3	6	8	14	25	33
WN08-3	3	2	4	7	12	17	28	50	66
WN09-1*	11	-	1	1	3	4	7	13	18
WWC14*	11		1	1	3	4	7	13	18
WWC7*	6	1	1	3	6	8	14	25	33
W14VS*	13	-	1	1	2	3	6	11	15
12AWG**	2	3	7	10	19	25	42	75	100
14AWG**	1.5	4	9	14	25	34	56	100	133
16AWG**	1	7	14	21	38	51	84	150	200
18AWG**	0.75	9	18	28	50	68	112	200	266
Conduit Size		1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"
Conduit Factor #		7	14	21	38	51	84	150	200

* For multiple large cables add factor of 4.

**Thermoplastic wire (Type F, TF or TW).

4.1 Choosing Conduit Size for Same Type of Cable or Wire

Above each conduit size is the maximum recommended number of cables or wires which will fit into the particular conduit size. Use this value for the particular cable needed. This may be exceeded slightly where absolutely necessary, since number of cables or wires is based on 40% fill.

CAUTION: As previously stated, system cabling should not be placed in the same pipe, conduit or compartment containing other electrical systems, high voltage wiring, or coaxial wiring.

4.2 Choosing Conduit Size for Combination of Cables and Wires

To determine the conduit size required for a combination of different cables and wires, proceed as follows:

- a. Refer to the factor numbers of the particular cables and wires going into the conduit. Add all the cable and wire factor numbers. When more than one large cable (represented by the * symbol in Table 11) is used in the same conduit, add a factor of 4 to the sum of cable and wire number factors.
- b. With this figure, refer to the conduit factor numbers given for the various conduits. Choose the next conduit size which is larger than the total sum of cable and wire factor numbers you have computed.

CAUTION: As previously stated, system cabling should not be placed in the same pipe, conduit or compartment containing other electrical systems, high voltage wiring, or coaxial wiring.

Example:

Choose the conduit size for two WN09-1 cables (cable factor #11 each), four WN05-1 cables (cable factor #3 each), one 14AWG wire (wire factor #1-1/2), and two 12AWG wires (wire factor #2 each).

2 WN09-1, Cable Factor #11	(2 x 11)	22
4 WN05-1, Cable Factor #3	(4 x 3)	12
1 14AWG, Wire Factor #1-1/2	(1 x 1-1/2)	1-1/2
2 12AWG, Wire Factor #2	(2 x 2)	4
Large Cable (multiple WN09-1 cables) Factor #4		4
 TOTAL CABLE/WIRE FACTOR		43-1/2

Refer to the conduit factor numbers on the bottom of Table 11. A 1-1/2" conduit, which has the next larger factor number of 51, would be used.

5. SYSTEM LAYOUTS USING THE NEW CABLES

For your convenience, Figures 1 and 2 show how the new cables are implemented in a Care/Com or Care/Com II installation. Figure 1 is a simplified block diagram whereas Figure 2 represents an actual floorplan.

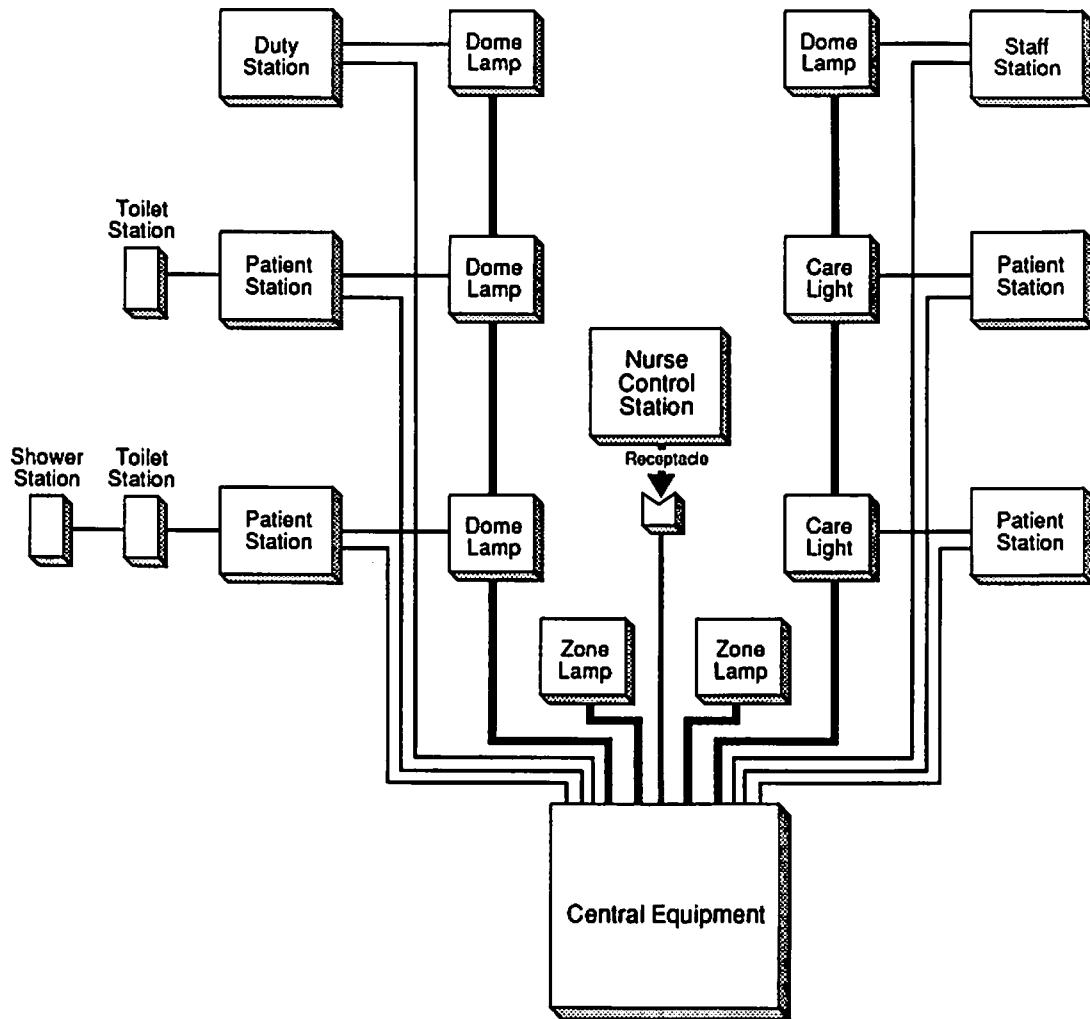


Figure 1. System Basic Block Diagram

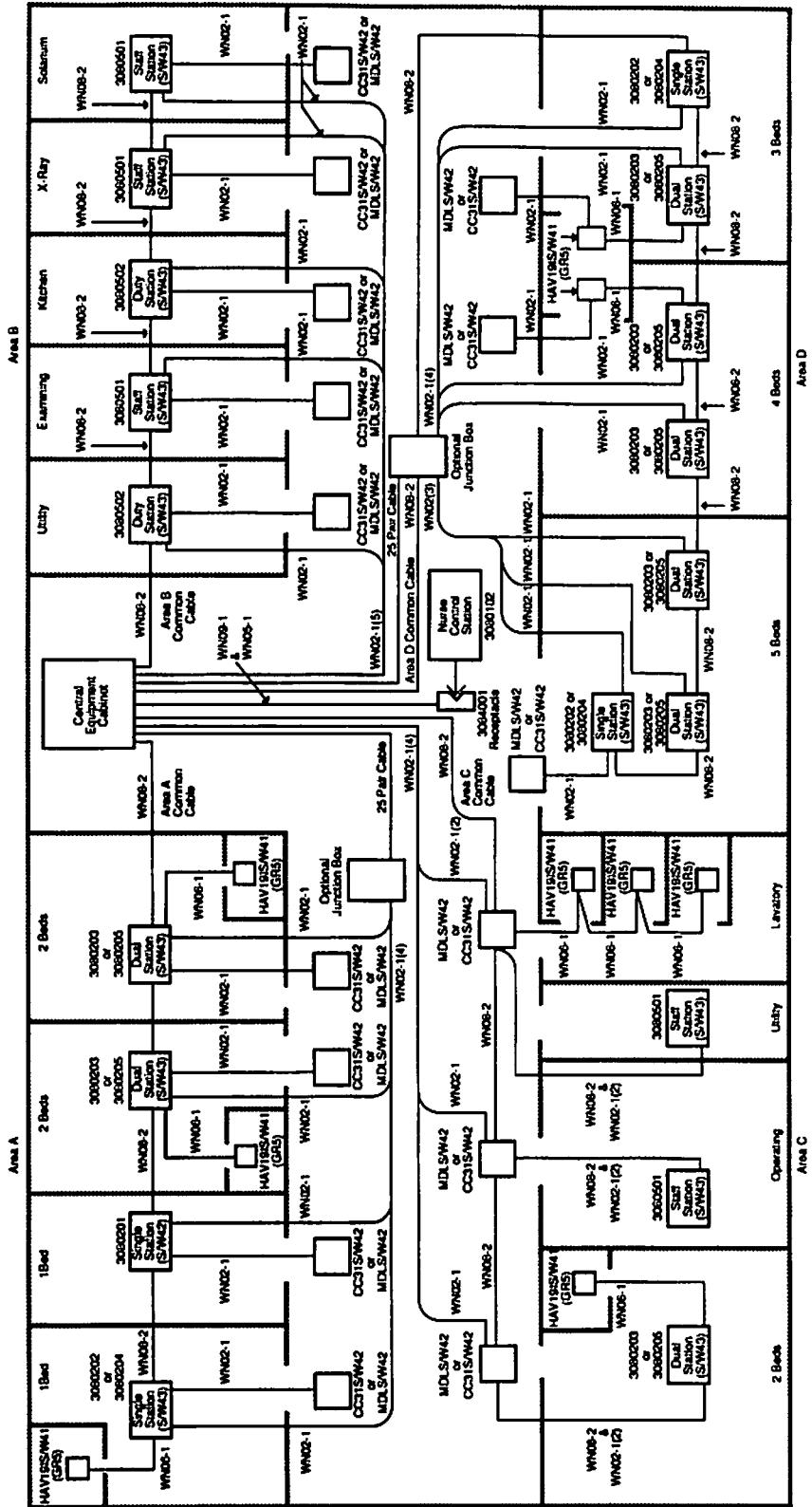


Figure 2. Sample System Layout



6 Thorndal Circle
Darien, CT 06820

HEALTHCARE

HealthCare HealthCare Update Update

Part Number TF1772
January 24, 1992

Installation Information for the Multi-Sectional Dome Lamp, the Care-Light and the Ceiling Light

1. INTRODUCTION

As part of the UL requirements for the multi-sectional dome lamp, the care-light, and the ceiling light, a strain relief must be installed for the lamp wires.

This Tech Fact shows how to properly install the strain relief as well as how to assemble, connect, and mount these visual signaling devices.

1.1 Model MDLS/W42 Dome Lamp Description

The surface wall or ceiling mounted modularly constructed dome lamp consists of a faceplate and yoke assembly with provisions for up to four colored lenses. Filler plates are available to cover openings for unfilled lamp positions. The yoke assembly is a metal plate provided with the necessary hardware for installation onto a two gang backbox.

The Model MDLS/W42 Dome Lamp consists of the following items:

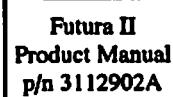
- ◆ one Yoke Assembly
- ◆ one Faceplate
- ◆ four Tubular Fasteners
- ◆ four Pan Head Screws

The yoke assembly comes equipped with one "U" type fastener, one green hex head screw, and one strain relief including tie wrap.

Route To:

District Manager	<input type="checkbox"/>
Distributor Principal	<input type="checkbox"/>
Sales	<input checked="" type="checkbox"/>
Operations	<input type="checkbox"/>
Technicians	<input type="checkbox"/>
HealthCare	<input type="checkbox"/>

File In:



- continues -

In addition to the previous list of components, the following components are packaged separately (in packages of 20):

- ◆ A31940 Clear Lamp
- ◆ A44835 Lamp Socket
- ◆ A44376-1WH White Lens
- ◆ A44376-1GN Green Lens
- ◆ A44376-1A Amber Lens
- ◆ A44376-1R Red Lens
- ◆ A44376-1BL Blue Lens
- ◆ A44377 Filler Plate

The Futura II HPNMSDM Multi Station Dome Module

The Model HPNMSDM Multi Station Dome Module is required in Futura II applications where the multi-sectional dome lamp is connected to multiple patient stations in one room. The dome module is mounted on the metal plate (yoke assembly) supplied with the multi-sectional dome lamp.

Inputs to the multi station dome module include the fail safe bus (FSB) in and out, +12 VDC, and ground. Output from the multi station dome module is to the call dome lamp (white). For installation see paragraph 2.

1.2 Model CC31S/W42 Care-Light and Model CC31S/W42-CL Ceiling Light Description

The wall recessed or surface mounted care-light comes with a transparent edge-lit insert and a faceplate constructed of high impact, molded thermoplastic with flame retardant properties. The ceiling light has an amber edge-lit insert with the same faceplate. Each incorporates a long-life bulb that is easily removable for replacement.

The CC31S/W42 Care-Light and the CC31S/W42-CL Ceiling Light are supplied with an adapter subplate and the necessary hardware for installation onto a single gang or two gang backbox.

The Model CC31S/W42 Care-Light and Model CC31S/W42-CL Ceiling Light consist of the following items:

- ◆ one Adapter Subplate Assembly
- ◆ one Faceplate
- ◆ four Tubular Fasteners
- ◆ four Flat Head Screws (1")
- ◆ one Transparent Viewing Plate - CC31S/W42 only
- ◆ one Amber Viewing Plate - CC31S/W42-CL only
- ◆ one Pilot Lamp Socket (Black)
- ◆ one Pilot Lamp Socket (White)
- ◆ one White Tubing (1/2" x 7/8")*
- ◆ one Pilot Lamp
- ◆ one Light Shield
- ◆ two WIRENUTS

* The white tubing is only used when the black pilot lamp socket is used.

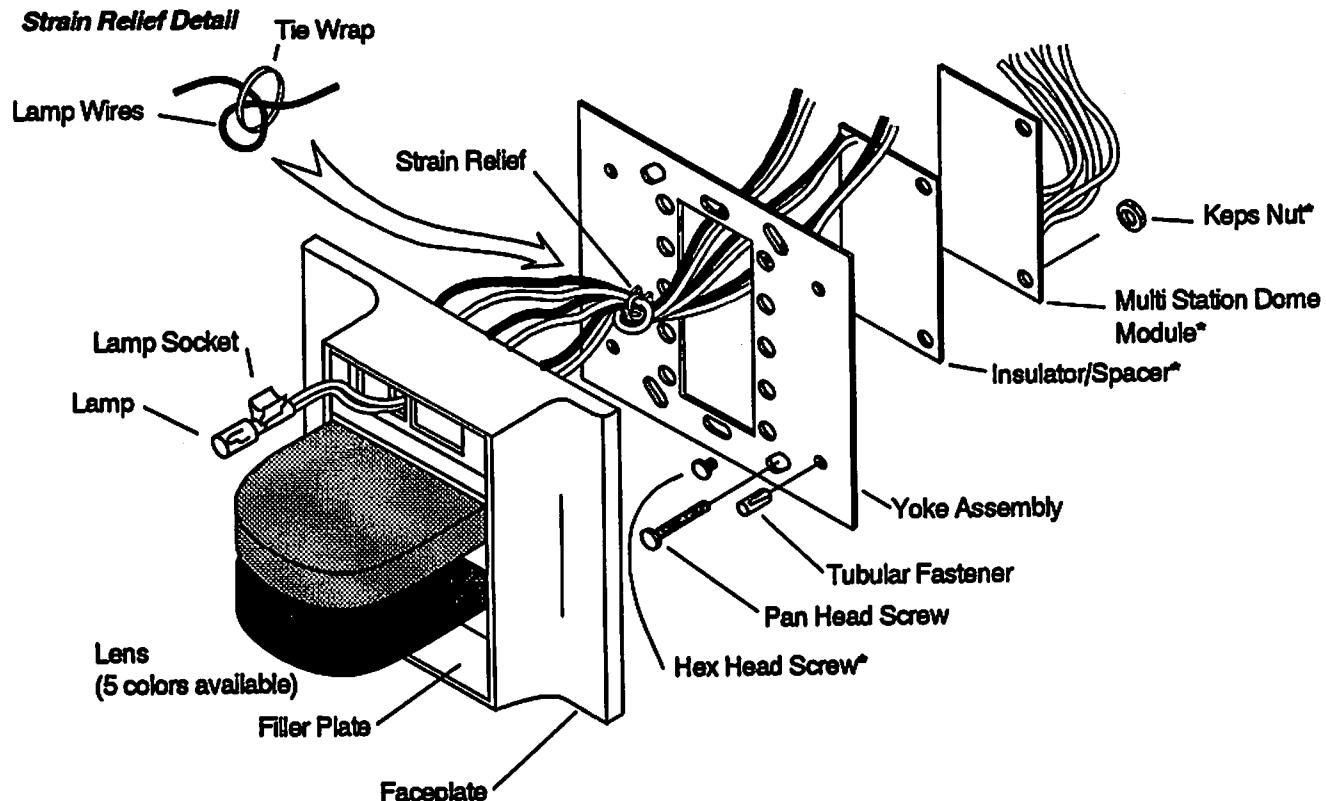
The adapter subplate assembly comes equipped with one "U" type fastener, one green hex head screw, and one strain relief including tie wrap.

2. INSTALLING THE MODEL MDLS/W42 DOME LAMP

2.1 Assembling the Multi-Sectional Dome Lamp

Refer to Figure 1 and proceed as follows:

- a. Insert the four tubular fasteners into the four corner round holes of the yoke assembly until they snap in place.
- b. Mount the lamp socket(s) onto the faceplate. Thread each pair of wires through the strain relief mounted on the yoke assembly as shown in Figure 1. Make sure to loop the wires around and through the tie wrap per Figure 1.
- c. If more than one station is connected to the dome lamp, install one HPNMSDM Multi Station Dome Module with insulator spacer onto the yoke assembly. Secure the multi station dome module and insulator spacer to the yoke assembly using the two screws and two hex nuts supplied.



* Part of HPNMSDM, only required when connecting dome lamp to more than one patient station.

Figure 1. Exploded View of the MDLS/W42 Multi-Sectional Dome Lamp

2.2 Connecting the Multi-Sectional Dome Lamp

Refer to Figure 2 and proceed as follows:

- a. Connect the WN05-1 Cabling from the patient station (for dome lamp application) or equipment panel (for zone lamp application) to the lamp socket wires.
- b. If more than one station is connected to the dome lamp, connect the HPNMSDM Multi Station Dome Module as shown in Figure 3.
- c. Connect a building ground wire to the green hex head screw terminal and tighten the "U" type fastener.

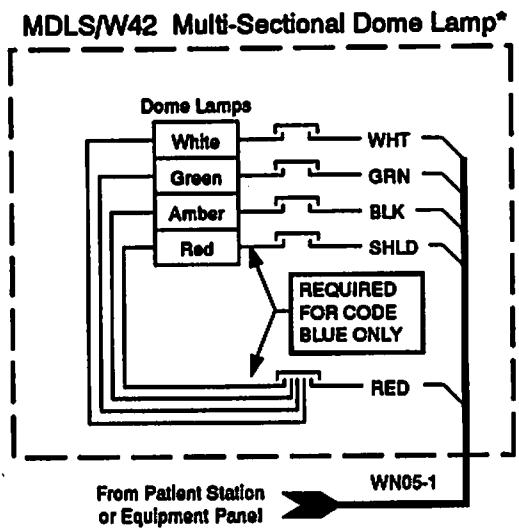


Figure 2. Connections for the Multi-Sectional Dome Lamp

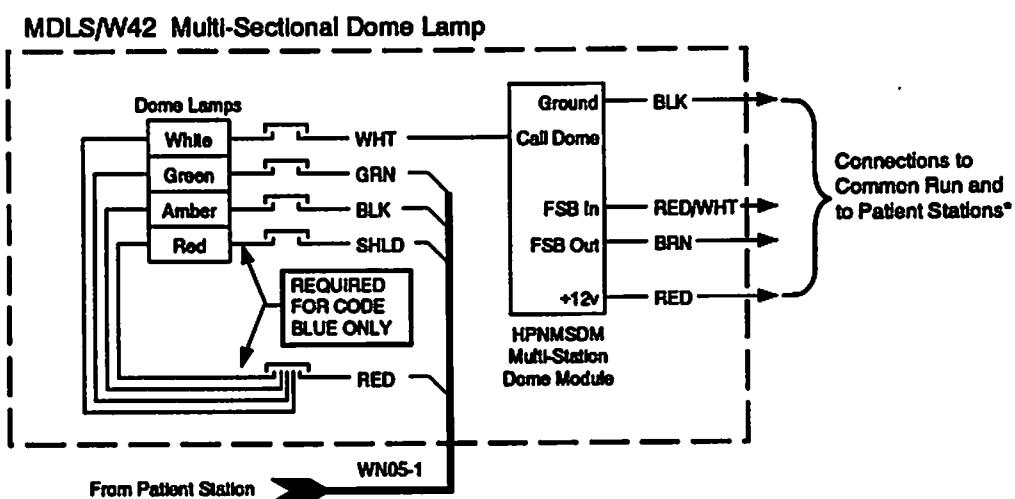


Figure 3. Connections for Multi Station Dome Module

2.3 Mounting the Multi-Sectional Dome Lamp

Refer to Figure 1 and proceed as follows:

- a. Using the four pan head screws, loosely attach the yoke assembly to the backbox.
- b. Rotate the yoke assembly to attain proper orientation and tighten the four pan head screws.
- c. Dress lamp wires inside the backbox, and after aligning the four mounting studs of the faceplate into the tubular fasteners, firmly push the faceplate until it is securely resting against the wall surface.
- d. Insert the lamp(s) into the lamp socket(s) and lock the lamp by pushing in and rotating it clockwise.
- e. Insert the colored lenses into the faceplate.
- f. Where there is no lamp or lens, insert filler plate(s) into the faceplate.

3. INSTALLING THE MODEL CC31S/W42 CARE-LIGHT AND THE MODEL CC31S/W42-CL CEILING LIGHT

3.1 Assembling the Care-Light and Ceiling Light

Refer to Figure 4 and proceed as follows:

- a. Insert the four tubular fasteners into the four corner round holes of the adapter subplate until they snap in place.
- b. Thread the pair of wires through the strain relief mounted on the adapter subplate according to Figure 4. Make sure to loop the wires around and through the tie wrap per Figure 4.

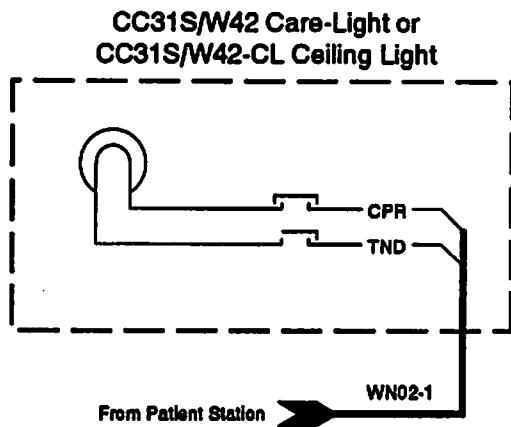


Figure 5. Connections for the CC31S/W42 Care-Light or CC31S/W42-CL Ceiling Lamp

3.3 Mounting the Care-Light and the Ceiling Light

Refer to Figure 4 and proceed as follows:

- a. Using the four flat head screws, loosely attach the adapter subplate to the backbox. Use the two center slots for single gang backboxes, or use the four corner slots for two gang backboxes.
- b. Rotate adapter subplate to attain proper orientation and tighten the four flat head screws.
- c. If the black pilot lamp socket (A44780) is used, slip the 7/8" piece of white tubing over the black pilot lamp socket insulation. Make sure that the white tubing and the black lamp socket insulation are even.
- d. Insert the pilot lamp into the pilot lamp socket and lock by pushing in and rotating clockwise.
- e. Install the light shield over the pilot lamp and snap pilot lamp socket onto the faceplate.
- f. Insert either the transparent viewing plate (for the CC31S/W42 Care-Light) or the amber viewing plate (for the CC31S/W42-CL Ceiling Light) into the faceplate opening. Then adjust pilot lamp and light shield for maximum light transfer.
- g. Dress the lamp wires inside the backbox, and after aligning the four mounting studs of the faceplate into the tubular fasteners, firmly push the faceplate until it is securely resting against the wall surface.

4. HOW TO OBTAIN ADDITIONAL COPIES OF THIS TECH FACT

You can place your order for additional quantities of this Tech Fact using part no. TF1772; the price is \$1.00 each.